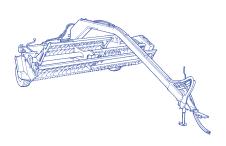
NEW HOLLAND 499

(Replaces All Previous Issues)





TO THE OWNER

This manual contains information concerning the operation, adjustment, and maintenance of your Model 499 pivot tongue mower-conditioner. You have purchased a dependable machine, but only by proper care and operation can you expect to receive the performance and long service built into this mower-conditioner. Please have all operators read this manual carefully and keep the manual available for ready reference.

This machine is designed to be attached to and powered by an agricultural tractor. It is intended to mow and condition forage-type crops including, but not limited to, alfalfa, clover and mixed grass/hay crops prior to baling or chopping.

Your New Holland dealer will instruct you in the general operation of your mower-conditioner. (Refer to the "Delivery Report" at the back of this manual.) Your dealer's staff of factory-trained service technicians will be glad to answer any questions that may arise regarding the operation of your mower-conditioner.

Your New Holland dealer carries a complete line of genuine New Holland parts. These parts are manufactured and carefully inspected in the same factories that built the mower-conditioner to insure high quality and accurate fitting of any necessary replacement parts. Be prepared to give your dealer the model and product identification number (PIN) of the pivot tongue mower-conditioner when ordering parts. Locate these numbers now and record them below. Refer to the "General Information" section of this manual for the location of the model and product identification numbers of your pivot tongue mower-conditioner.

Model

Product Identification Number					
^	WARNING	lack			
This safety alert symbol indicates important carefully read the message that follows and	safety messag	es in th			
A	WARNING	A			
Pictures in this manual may show protective feature or adjustment.	shielding oper	or rem	oved to bet	ter illustrate	a particular
Be certain, however, to close or replace all	shielding befor	e oper	ating the ma	chine.	

IMPROVEMENTS

CNH America LLC is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

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PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements ("**DANGER**", "**WARNING**", and "**CAUTION**") followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

This word "DANGER" indicates an immediate hazardous situation that, if not avoided, will result in decor serious injury. The color associated with Danger is RED.
This word "WARNING" indicates a potentially hazardous situation that, if not avoided, could result death or serious injury. The color associated with Warning is ORANGE.
This word "CAUTION" indicates a potentially hazardous situation that, if not avoided, may result in mit or moderate injury. It may also used to alert against unsafe practices. The color associated with Caut is YELLOW.

FAILURE TO FOLLOW THE "DANGER", "WARNING", AND "CAUTION" INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

The precautionary statement ("**IMPORTANT**") is followed by specific instructions. This statement is intended for machine safety.

IMPORTANT: The word "IMPORTANT" is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.

INFORMATION

NOTE: Instructions used to identify and present supplementary information.

SAFETY

$oldsymbol{\Lambda}$ PRECAUTIONARY STATEMENTS $oldsymbol{\Lambda}$

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read the following precautions before operating this machine. This machine should be operated by only by those who are responsible and instructed to do so.

Carefully review the procedures given in this manual. It is important that all operators be familiar with and follow safety procedures.

- Before operating the machine, study this Operator's Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating. It is your responsibility to understand and follow manufacturer's instructions on machine operation, service, and to observe pertinent laws and regulations. Operator and Repair Manuals may be obtained from your equipment dealer.
- 2. ALWAYS turn OFF the tractor engine, remove the key, and make sure all motion has stopped before servicing, cleaning, lubrication or making any adjustments on the machine.
- 3. Do not start the machine until you are sure that no tools are lying on it.
- 4. Do not wear loose fitting clothing, jewelry, watches, or other items that can get caught in moving parts. Tie up long hair that can get caught in moving parts.
- 5. Do not attempt to remove material from any part of the machine while it is in operation.
- Do not leave the tractor while the tractor PTO or hydraulic drive is engaged.
- 7. Always replace or close all shields after making repairs, adjustments, or after lubrication. Shields are used for your protection. Keep them in place!
- 8. Do not allow anyone to ride on the machine.
- Use the proper size hitch pin with safety cotter at all times.
- 10. Use of the safety chain is required when towing the machine on public roadways.
- 11. When you disconnect and later reattach the machine to a standard electrical socket on propelling vehicle, the brake light must be reconnected to function.

- Replace any safety signs that are missing or cannot be read. Replacement safety signs are available from your local dealer.
- 13. Hydraulic oil leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: relieve all pressure, before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.
- 14. Understand and comply with state and local laws governing highway safety regulations concerning transporting a machine on public roads. Make sure road lamps, safety markings, and all safety devices are installed and in working order.
- 15. When assembling, operating or servicing the machine, wear protective clothing and personal safety devices that are necessary for the particular procedure. Some personal safety devices that may be necessary are protective shoes, face and/or eye protection, hard hat, heavy gloves, filter mask and hearing protection.
- 16. Keep the area used for serving the machine clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- 17. Always lower the header to the ground or engage the transport stops when parking.
- 18. Always use the header transport stops and spring-loaded tongue safety lock when transporting the machine.

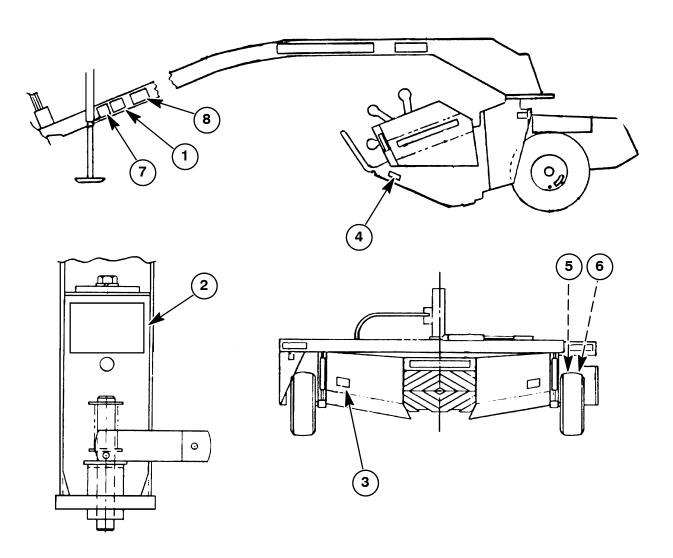
- 19. Never work under a raised header unless it is securely locked with the header transport stops.
- 20. Always block the wheels before working on or under the machine.
- 21. Limit towing speeds to 32 km/hr (20 mph) maximum.
- 22. Never stand behind the mower-conditioner while it is running.
- 23. Operate the machine only at the PTO speed for which it is designed. attach a 540 rpm implement only to a 540 rpm PTO and a 1000 rpm implement to a 1000 rpm PTO.

SAFETY DECALS

The following safety decals have been placed on your machine in the areas indicated. They are intended for your personal safety and for those working with you. Please take this manual and walk around your machine to note the content and location of these warning signs. Review these warning signs

and the operating instructions detailed in this manual with your machine operators.

Keep the decals legible. If they are not, obtain replacements from your New Holland dealer.





WARNING Before operating machine, read operator's manual and ALL SAFETY instructions. If manual is missing, contact your dealer or service department. 1. Before starting engine or 5. Use Slow-Moving Vehicle (SMV)

- operation, clear area of bystanders. 2. Disengage drives including PTO.
- Disengage drives including PTO.
 Stop engine, wait for all
 movement to stop before
 leaving operator's position.
 Keep all shields in place, keep
 hands, feet, clothing and hair
 away from moving parts.
- 5. Use Slow-Moving Vehicle (SMV) identification emblem and flashing warning lights when operating on highways, except when prohibited by law.
- Never adjust, lubricate, clean or unplug machine with engine running.

Failure to comply could result in death or serious injury.

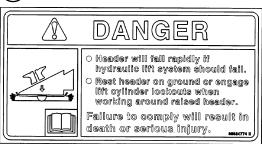


Part #86622073

1. Keep riders off machines

WARNING: Read the complete operator's manual and become familiar with starting, operating and safety instructions in the manual and on the unit





Part#86624774

DANGER: To avoid injury, do not work under a raised header without cylinder locks in place.

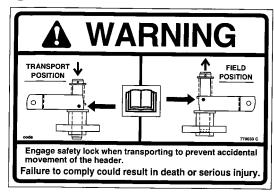




Part#782883

CAUTION: Behind shield is a sharp edge. Avoid contact when servicing. Carelessness may cause injury to hands or fingers





Part #7700533

WARNING: Ensure that the tongue safety lock is engaged to prevent accidental movement.





Part #849471

DANGER: Rotating driveline can cause death.

Failure to comply will result

in death or serious injury.





Part #849472

WARNING: Properly prepare machine for transport. Use caution when towing unit. Failure to comply could result in death or serious injury.





Part #87041060

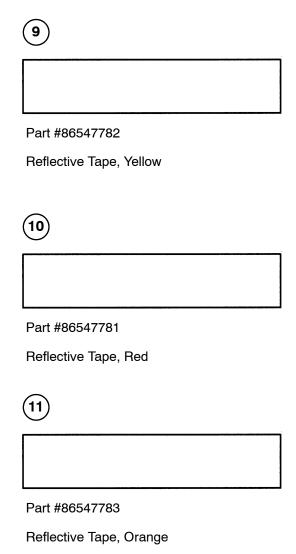
WARNING: Properly prepare machine for transport. Use caution when towing unit. Failure to comply could result in death or serious injury.





Part #87041061

Warning: Shielding must be in place when PTO is engaged. Failure to comply could result in death or serous



SECTION 1 GENERAL INFORMATION

Left and right are determined by standing behind the unit, looking in the direction of travel.

PRODUCT IDENTIFICATION NUMBER (PIN)

The product identification number plate, 1, is on the frame above the left tire. Record the PIN in the space below.

Product Identifica	tion Number	
Date Purchased		

Give your dealer the model and PIN of your mower-conditioner when ordering parts. Always order genuine New Holland parts from your New Holland dealer.

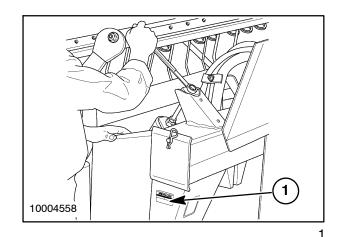
SMV EMBLEM

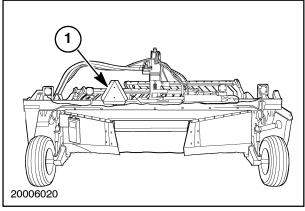
Some states and provinces require Slow-Moving Vehicle (SMV) emblems on machines traveling at speeds under 40 km/hr (25 MPH). Consult local regulations for specific information and mounting requirements.

An SMV mounting bracket is located on the left rear main frame. The SMV emblem, 1, and mounting bracket are furnished as standard equipment on the Model 499 mower-conditioner.

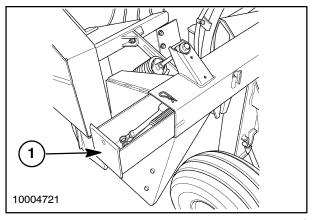
TOOLBOX

A toolbox, 1, is provided for tools carried to make normal field adjustments. Replace the hairpin cotter to keep the box closed.





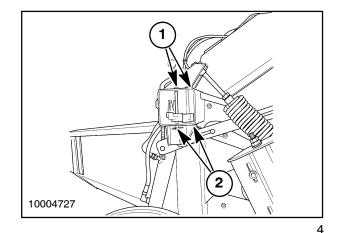
2



SPARE KNIFE STORAGE

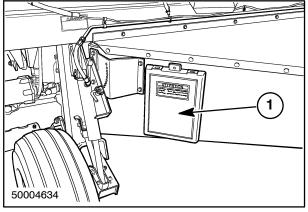
Two spare knives can be stored in the frame tube. Install drilled pins, 1, through the frame holes and knife heads. Install hairpin cotters, 2, in the drilled pins.

NOTE: Spare knives do not come with the machine.



MANUAL HOLDER

A manual holder, 1, is mounted on the left side of the windrow hood, and provides a readily accessible storage location for this manual.



TRACTOR REQUIREMENTS

45 kw (60 HP) minimum PTO horsepower.

Adequate tractor weight, ballast, wheel spacing, and tire inflation to stabilize the tractor on hillsides.

Two remote hydraulic circuits with a minimum of 121 bar (1750 PSI) not to exceed 173 bar (2500 PSI). One of the circuits must be two-way for the swing cylinder.

540 RPM PTO or 1000 RPM PTO, depending on the mower-conditioner.

If the tractor has a ground drive PTO, disengage the PTO before backing the mower-conditioner. Running the PTO in reverse can damage the hydraulic pump and motor.

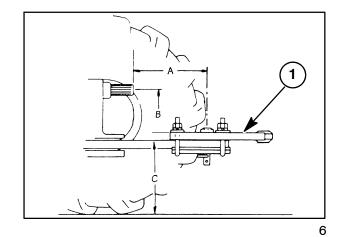
ASAE standard hitch and PTO dimensions.

TRACTOR DRAWBAR DIMENSIONS

The 499 requires that the drawbar be adjusted to provide a distance of 559 mm - 609 mm (22" - 24") from the end of the tractor PTO shaft to the center of the hitch point on the tongue. The same distance is necessary whether using a 540 RPM PTO or 1000 RPM PTO. This dimension may be obtained in two ways:

Option 1

Adjust the tractor drawbar to a distance of 350 mm (14") - 540 RPM PTO or 406 mm (16") - 1000 RPM PTO, dimension A, from the end of the tractor PTO shaft to the center of the drawbar hole, and install the drawbar extension, 1, that is provided with the 499. The drawbar extension increases drawbar length by 8" (203 mm) to provide the 559 mm - 609 mm (22" - 24") length required.



Option 2

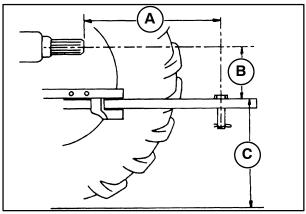
Some newer tractors may be equipped with drawbars that can be adjusted to a distance of 508 mm - 609 mm (20" - 24"), dimension A, from the end of the tractor PTO shaft to the center of the drawbar hole. In this case, the 499 tongue may be connected directly to the tractor drawbar.

NOTE: Using a tractor with an incorrect PTO-to-hitch dimension can damage the gearbox, pump, hoses and/or the tractor PTO drive line.

Ideally the top of the tractor drawbar should be 203 mm-305 mm (8"-12"), dimension B, Figure 6 or Figure 7, below the tractor PTO shaft. Locate the drawbar directly below the PTO shaft. Clamp the drawbar so it cannot be moved from side to side.

The drawbar height above the ground, dimension C, Figure 6 or Figure 7, should be 330 mm - 508 mm (13" - 20") for tractors up to 125 HP, and 381 mm - 559 mm (15" - 22") for tractors from 125 HP to 160 HP.

IMPORTANT: If the tractor has a 3-point hitch, raise the lower links as high as possible to prevent pump, hose, or tongue damage when turning, or remove the lower links to avoid damage.



HITCHING TO TRACTOR (S/N 520722 AND ABOVE)

IMPORTANT: On tractors that can not adjust the drawbar to 20" or 24", the hitch extension must be installed on the tractor drawbar, so the mower-conditioner tongue clears the tractor tire when cutting around corners, and to prevent damage to the hydrostatic pump, hoses or tongue.

NOTE: Failure to use the extension on tractors that can not adjust the drawbar to 20 " or 24 " will result in component damage.

With the tractor on a level hard surface, measure from the ground to the top of the drawbar. If the drawbar is less than 559 mm (22") above the ground, install the extension, 1, on top of the drawbar, as shown in Figure 8.

If the drawbar is 559 mm (22") or higher, install the extension, 1, on the bottom of the drawbar, as shown in Figure 9.

Install drawbar extension, 1, and clamp, 2, on the drawbar. Install drilled pin, 3, in the **front** hole of the extension and rear hole of the drawbar. Install hairpin cotter. Tighten the 5/8" nuts evenly to 189 N·m (140 ft. lbs.).

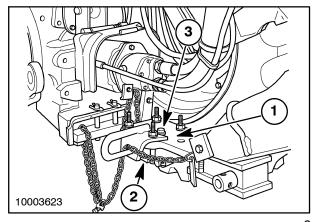
NOTE: If the extension is on the bottom of a high drawbar, shorten the clamp bolts to clear the windrow.

NOTE: Lubricate and be sure the ball in the hitch extension is free to turn. If this is not done the unit will be difficult to hitch to the tractor, and the hitch pin will try to work its way up.

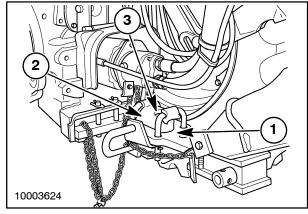
Hitch the mower-conditioner to the drawbar extension with a drilled pin and hairpin cotter.

IMPORTANT: Do not use rear 1" hole in the extension. Attach the extension solidly to the tractor drawbar. Pivoting the tongue will put heavy side loads on the tractor.

IMPORTANT: The tractor drawbar must be the correct distance from the end of the PTO shaft to the hole and the drawbar extension must be used to prevent damage to the pump or hoses.



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HITCHING TO TRACTOR (S/N 520721 AND BELOW)

Tractor requirements are the same as shown in "Tractor Drawbar Dimensions" on page 1-2, except for an additional 21/32" hole, 1, that is required in the drawbar for bolt, 1, Figure 7.

NOTE: With the tractor on a level hard surface. measure from the ground to the top of the drawbar. If the drawbar is less that 559 mm (22") above the ground, install the extension on top of the drawbar. If the drawbar is 559 mm (22") or higher, install the extension on the bottom of the drawbar.

Attach the drawbar extension on the mower-conditioner tongue to the tractor drawbar as shown.

IMPORTANT: Bolt the drawbar extension solidly to the tractor drawbar. Pivoting the tongue will put heavy side loads on the tractor drawbar.

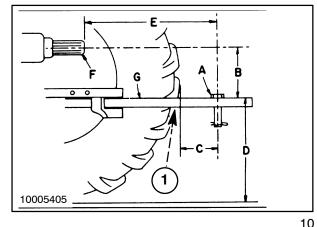
Install a 5/8" drilled bolt, 1, and plated washer up though the tractor drawbar and extension. Use plated washers as required at 2, and install slotted nut, 3. Install a 1" drilled bolt, 4, and plated washer up through the tractor drawbar and extension. Use plated washers as required at 5, and installed slotted nut, 6.

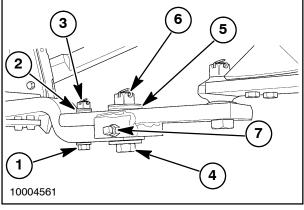
Tighten drilled bolt, 1, to 190 N·m (140 ft. lbs.) torque, and install a 1/8" x 1" cotter pin.

Tighten drilled bolt, 4, to 271 N·m (200 ft. lbs.) torque, and install a 3/16" x 1-3/4" cotter pin.

Install two 1/2" x 2" setscrews and jam nuts on each side of the extension at 7. Tighten the setscrews against the side of the tractor drawbar and tighten the jam nuts.

IMPORTANT: If the drawbar extension is not used. the hydrostatic pump, hoses, or tongue may be damaged.





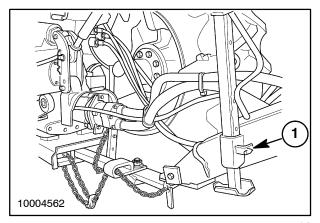
JACK

NOTE: The 499 mower conditioner may be equipped with either a stationary square tube style jack or a removable round tube style jack.

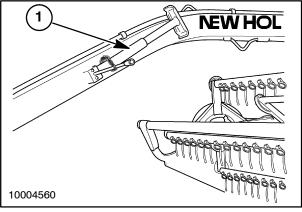
If equipped with a square tube style jack, retract the jack by turning the handle counter-clockwise. Pull the spring-loaded handle, 1, and raise the jack up in the mount. Release the handle to latch the jack in the raised position.

If equipped with a round tube style jack, retract the jack by turning the handle counter-clockwise. Pull the pin and remove the jack. Store the jack, 1, on the left side of the tongue. Secure the jack with the pin.

NOTE: To prevent the jack from unwinding during use, loop the chain over the handle before inserting the pin.



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MOUNTING PUMP ON THE PTO SHAFT

IMPORTANT: Failure to use the drawbar extension or tractor with ASAE standard PTO to hitch dimensions can cause damage to the pump unit and hoses. The pump must not be fastened to the PTO. It must be free to slip off if a drawbar breaks or a hitch pin fails.

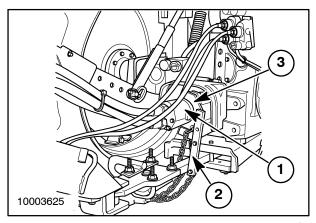
540 RPM PTO UNITS

IMPORTANT: Coat the tractor PTO splines and splines in the pump gearbox with grease. Slide the pump, 1, all the way onto the PTO shaft.

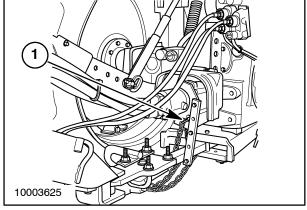
IMPORTANT: The torque arm, 2, must be against the right side of the drawbar to keep the pump from rotating. Bend the torque arm back or use spacers and longer bolts at the pump plate, 3, to allow the pump to go all the way onto the PTO shaft.

- 1. Move the torque arm up on the pump plate to prevent dragging the windrows.
- 2. Loop chain, 1, around the drawbar and secure the chain in the keyhole slot in the pump plate.
- To prevent damage to the hydraulic hoses, turn the tractor and tongue to the extreme left and right positions. At each extreme position, check the hoses to be sure they are not pinched or binding. Remove twist from the hoses, then tighten hose connections securely.

NOTE: When the tractor is positioned straight ahead of the tongue, the hoses should be directly above the hitch.



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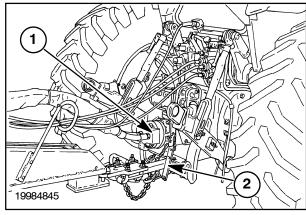


1000 RPM PTO UNITS

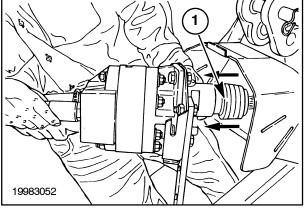
IMPORTANT: Coat the tractor PTO splines and splines in the pump, 1, all the way onto the PTO shaft, until the slide collar is fully engaged.

IMPORTANT: The torque arm, 2, must be against the right side of the drawbar to keep the pump from rotating. Move the torque arm up on the pump plate to prevent dragging in the windrows. Always loop the chain around the drawbar and secure the chain in the keyhole slot in the pump plate.

The 1000 RPM direct drive pump attaches to the tractor by pulling back on the ring at the end of the PTO pump coupler, 1. The ring will snap into place, remaining retracted.

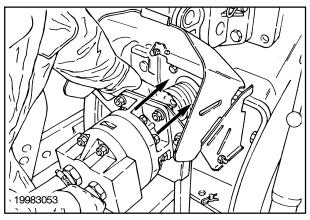


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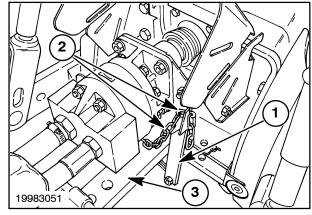
17

Push the pump onto the shaft. When the pump is on the shaft, the retaining ring will return to the forward position. Continue to push the pump onto the PTO shaft until it is fully seated. The pump should not slide off the PTO shaft without pulling back on the retaining ring.



With the pump in place, the torque arm, 1, should extend below the drawbar, 3, preventing the pump from turning with the PTO shaft. Adjust the torque arm as needed by moving it up and down along the mounting holes provided. Tighten the bolts to the appropriate torque at this time. Secure the chain around the drawbar and hook it into the mounting bracket, 2.

To prevent damage to the hydraulic hoses, turn the tractor and tongue to the extreme left and right positions. At each extreme position, check the hoses to be sure they are not pinched or binding. Remove twists from the hoses, then tighten hose connections securely.



HYDRAULIC CYLINDERS

(Swing and Lift)



A WARNING **A**



Fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Always protect the skin and eyes from escaping fluid under pressure.

Before disconnecting lines or fittings, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes, and hoses are not damaged.

If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately.

CONNECTING THE HYDRAULIC HOSES TO THE TRACTOR

1/2" tapered pipe thread fittings are used on the three hydraulic cylinder hoses. Install hose couplings that will match the tractor couplings. Use a thread sealant.

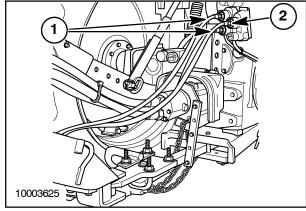
Connect the center and right (swing cylinder) hoses, 1, to the remote couplers from a two-way tractor control valve.

IMPORTANT: If this valve is adjustable, set it for slow hydraulic flow to the swing cylinder.

Attach the lift cylinder hose, 2, to a remote coupler from the second control valve. Connect the hose so the header will rise when the hydraulic valve lever is moved to the lift position.

IMPORTANT: Tractor hydraulic relief valve pressure must not exceed 207 bar (3000 PSI) or the machine may be damaged. It will require a minimum of 120.65 bar (1750 PSI) to activate the lift cylinders.

NOTE: Air must be bled from the lift and swing cylinders to fill the hydraulic system or whenever repairs are made to the lines and couplings.



TO BLEED AIR FROM THE LIFT CYLINDERS:

Loosen the hose swivel fitting, 1, at the upper end of the slave cylinder.

NOTE: Use a shop rag or other shielding means for protection from seeping oil at loosened fittings.

Actuate the tractor hydraulic lever and extend the master lift cylinder until oil flow from the loosened fitting is free of air. Then tighten the fitting.

IMPORTANT: If the cylinders do not extend far enough to release the transport stops, air remains in the hydraulic system and must be purged. If the right (master) cylinder does not extend far enough to engage the right transport stop, lower the header all the way to the ground. A timing notch inside the cylinder will allow excess oil to drain from the slave cylinder. Raise the header again to engage both transport locks.

Raise and lower the header several times until all air is purged from the system. Repeat the previous steps if necessary.

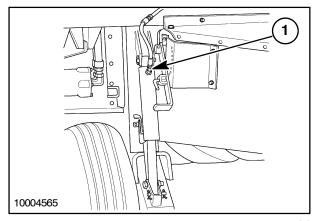


WARNING A

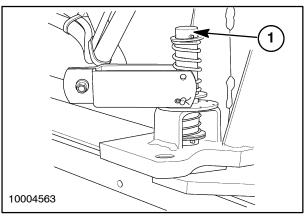


Before pivoting the tongue, be sure the header will clear any obstructions. Stand clear of the machine when pivoting the tongue. Air in the system or high hydraulic flow rate can cause erratic operation. Failure to comply may cause death or serious injury.

Disengage the spring-loaded lock pin, 1, and pivot the header from full left to full right and back several times to purge air from the lines.



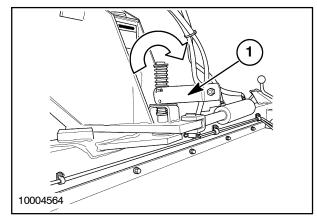
21



TONGUE LOCK

To disengage the tongue transport lock, rotate transport lock bracket, 1, up and over (one half turn) so that the transport lockpin is spring loaded upwards. Shift the machine slightly so that the transport lockpin disengages from the trailframe.

The tractor hydraulics can now be used to pivot the machine into the field position.



23

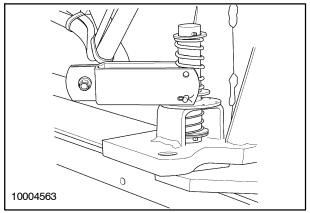
To engage the tongue transport lock, rotate the transport lock bracket up and over (one half turn) so that the transport lock pin is sprig loaded downwards. Shift the machine into the transport (center) position so that the transport lockpin engages in the trailframe.







Accidental operation of the swing cylinder during transport could cause the machine to swing into oncoming traffic if the tongue lock is not engaged. Failure to comply may cause death or serious injury.



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TRANSPORT STOPS



DANGER

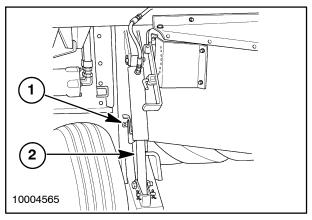


Always engage the transport stops when working around a raised head or transporting the machine on the highway. Failure to comply will cause death or serious injury.

IMPORTANT: If the right (master) cylinder does not extend far enough to engage the right transport stop, lower the header all the way to the ground. A port will open inside the cylinder and allow excess oil to drain from the slave cylinder. Raise the header again to engage both transport locks.

Move the tractor hydraulic lever to extend the hydraulic cylinders all the way. Pull latch, 1, to one side. Push the transport stop, 2, forward and release the latch behind the stop. Engage the right stop in the same way.

To release the stops, raise the header. Pull the latches out of the way. Pull the stops, 2, back and release the latches, 1, in front of the stops.



TRANSPORTING THE MOWER-CONDITIONER

Before transporting the mower-conditioner:

- Pivot the header to the center position.
- Be sure the tongue lockpin is fully engaged.
- Raise the header and engage both transport
- Secure the jack stand in the raised position.

Be sure the mower-conditioner is securely attached to the tractor drawbar or the hitch on the truck.

IMPORTANT: The drawbar extension on the mower-conditioner tongue should always be used when transporting the implement with a tractor. Do not remove the extension.



🛕 CAUTION 🛕



Limit towing speeds to 32 km/hr (20 MPH) maximum.

SAFETY CHAIN

The Safety chain is required when towing the machine on a public road.

The safety chain is intended to keep the machine under control in the event of loss or failure of the hitch pin or bolt.



WARNING A

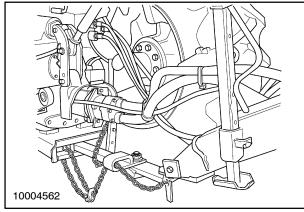


Always hook the safety chain to the tractor when towing the machine. Failure to do so will result in serious injury or death.

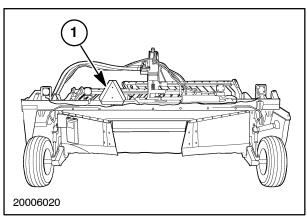
SLOW MOVING VEHICLE EMBLEM

Some states and provinces require Slow Moving Vehicle (SMV) emblems on machines traveling at speeds under 40 Km/Hr (25 MPH). Consult local regulations for information and mounting requirements.

A SMV mounting bracket is located on the left rear frame. The SMV emblem and mounting bracket are furnished as standard equipment on the 499 Mower-Conditioner. Attach the emblem in the frame socket at 1, as shown.



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TRAILING LIGHTS

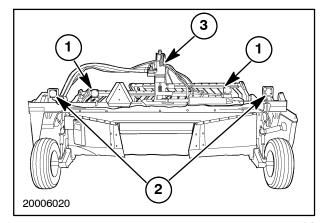
The trailing lights, as shown, should be used when towing the mower-conditioner on a public road.

The trailing lights consist of two red tail/brake lights, 1, and two amber flashing lights, 2, attached to brackets on the trailframe and a lighting control box, 3, positioned on the tongue that controls the signals from the tractor to the mower-conditioner and connecting wire harnesses.

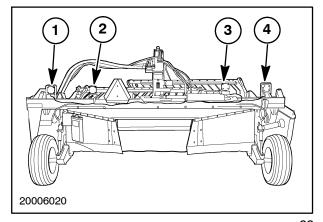
This lighting system is intended to improve the machine visibility on public roads. This machine is equipped with a lighting system which conforms to ASAE S279.13.

NOTE: The left and right sides of the mower-conditioner are determined while standing behind the unit, facing in the direction of travel.

IMPORTANT: Refer to local codes for trailing light requirements in your area.



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Mower Conditioner's Lights	Left Amber Outer Lamp, 1	Left Red Inner Brake Lamp, 2	Left Red Inner Tail Lamp, 2	Right Red Inner Brake Lamp, 3	Right Red Inner Tail Lamp, 3	Right Amber Outer Lamp, 4
Lights Off	Off	Off	Off	Off	Off	Off
Lights On	Off	Off	On	Off	On	Off
Brakes Only	Off	On	Off	On	Off	Off
Hazards/No Brakes	Flashing	Off	Off	Off	Off	Flashing
Hazards with Brakes	Flashing	On	Off	On	Off	Flashing
Left Turn/No Brakes	Flashing	Flashing	Off	Off	Off	On
Left Turn with Brakes	Flashing	Flashing	Off	On	Off	On
Right Turn/No Brakes	On	Off	Off	Flashing	Off	Flashing
Right Turn with Brakes	On	On	Off	Flashing	Off	Flashing

NOTE: The lighting control box is used to control the amber lamps and brake light circuits. The tail lamps are on only when the tractor park or road lights are on.

The 499 trailing light harness uses a 7-pin trailer connector to connect the mower-conditioner to a tractor electrical outlet, which conforms to SAE J560.

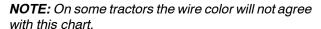
For proper light function, this unit must be connected to a tractor incorporating an SAE standard 7-pin conductor electrical socket which conforms to SAE J560. If your tractor does not have a 7-pin conductor electrical socket, obtain a #9603575 connector socket from your New Holland Dealer.

NOTE: The implement connector is shown in Figure 30.

INSTALLING THE SOCKET

Use the tractor wiring diagram or, if necessary, use a test light to identify the tractor wires. Connect the wires to the socket as follows:

Pin	Connector ID	Attached To
1	White (WHT)	Ground wire, all lights
2	Black (BLK)	Not used/worklights
3	Yellow (YEL)	Left side amber light
4	Red (RED)	Brake lights
5	Green (GRN)	Right side amber light
6	Brown (BRN)	Taillights
7	Blue (BLU)	Not used/auxiliary



Standard SAE J560 provides that the number 4 conductor socket of the propelling vehicle be connected to the brake light circuit so that the brake lights activate when the brake pedal is depressed.

Most newer model tractors are wired to provide the brake light signal through the number 4 pin in the connector socket. Older model tractors and most competitive tractors do not provide this capability. On these tractors, the brake lights on trailing implements will not function; however, hazard, turn, and tail lamps will function.

NOTE: On some competitive tractors, the number 4 pin in the socket is utilized for other functions. Therefore, this circuitry may be on all the time or any time the key switch is on. This will cause the trailing implement brake lights to be on all the time.

If you have one of these tractors, the brake light circuit can be disabled by disconnecting the bullet connector, 1, located in the wire harness where it attaches to the lighting control box.

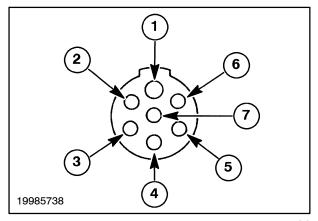


CAUTION

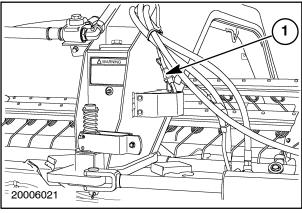


When you later reattach the machine to a standard electrical socket on propelling vehicle, the brake light circuit must be reconnected to function properly.

IMPORTANT: If this machine is to be transported on the highway, the propelling vehicle must be equipped with the appropriate electrical socket so that the brake lights function.



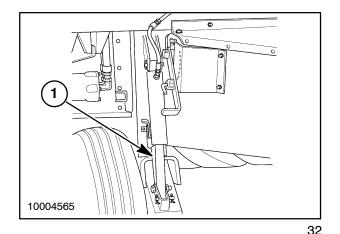
30



PULLING WITH A TRACTOR

Ensure the unit is securely attached to an appropriately sized tractor. Refer to the "Hitching to Tractor" portion of this manual.

Raise the header. Engage the transport stops, 1, to hold up the header.



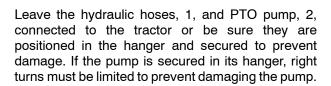
Swing the tongue to the center position and engage the spring-loaded lockpin. The swing cylinder hoses should be attached to the tractor at all times.



WARNING A



Accidental operation of the swing cylinder during transport could cause the machine to swing into oncoming traffic if the lockpin is not engaged. Failure to comply may cause death or serious injury.



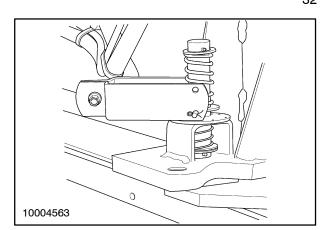
Use a safety chain, 3, when transporting the unit on a public highway. The safety chain is intended to keep the machine under control in the event of loss or failure of the hitch pin.



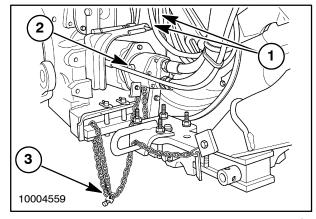
⚠ WARNING



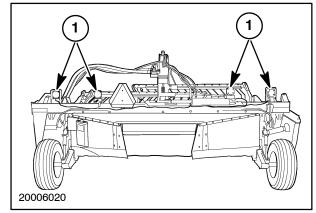
Always hook the safety chain to the tractor when towing the machine. Failure to do so will result in serious injury or death.



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When towing the mower-conditioner on a road or highway, ensure that the flashing lights harness is attached to the tractor, and the lights, 1, are functioning to adequately warn operators of other vehicles. Consult local governmental regulations for specific lighting requirements.



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PARKING THE MOWER-CONDITIONER

Disengage the tractor PTO. Park the machine on a level area.

Pivot the header to the center position and engage the tongue lockpin.

Lower the header to the ground. Or, let the header rest on the transport stops.

Lower and lock the jack stand, 1, or remove the jack from the storage position and install.

Remove the hydraulic pump, 2, from the PTO shaft and store the pump on the tongue bracket.



DANGER



Before disconnecting the lift cylinder hoses, be sure the header is resting on the ground or on the transport stops. Failure to comply will result in death or serious injury.

Disconnect the hydraulic hoses (swing and lift cylinders) and hang them so the ends do not get dirty.

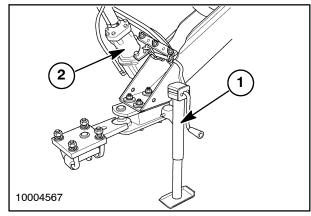
Remove the drawbar extension, clamp, and pin from the tractor. Store these parts on the tongue as shown.



WARNING A



Always replace shields after making repairs, adjustments, or lubricating. Shields are for your protection. Keep them in place! Failure to comply could result in death or serious injury.



SECTION 2 OPERATION

CHECK BEFORE OPERATING

WARNING A



Never adjust the pivot tongue mower-conditioner with the PTO engaged. Disengage the PTO, shut off the tractor engine and remove the key. Failure to comply could result in death or serious injury.

Before starting to use your new Model 499 mower-conditioner, be sure to do the following items:

Read this manual carefully!

Check the sheaves and sprockets to be sure they are properly aligned. The belts and chains must not rub on the shields or guides when running.

IMPORTANT: Be sure to check the tension of belts and chains after the first two hours of use and readjust as necessary from then on.

Check tire pressures, 193 kPa (28 PSI).

Check the wheel bolts after the first five hours of use. Torque the wheel bolts to 156 N·m (115 ft. lbs). Recheck wheel bolt torque every 50 hours of operation after this.

Lubricate the machine. Oil the reel drive chain. Use this manual as a guide to be sure that no grease fittings have been missed. Be sure the tongue reservoir and gearboxes are filled to the correct level.

Run the machine at rated PTO speed (540 or 1000 RPM). Overspeed causes excessive wear, vibration, and breakdowns. Underspeed may cause plugging at the header or conditioner. Your New Holland dealer can use a hand tachometer to check tractor PTO speed. The tractor throttle should be set correctly to maintain correct RPM at the PTO shaft.

Operate the machine slowly for 15 minutes to be sure that all parts work freely. Then check for overheated bearings and knife sections. Slight warming is normal. If a bearing or knife section feels hot and shows signs of paint burning or discoloration, check with your New Holland dealer.

Any problems should be corrected before cutting starts.

Refer to "Field Adjustments" in this section of this manual for information on adjustments that may improve the performance of your mower-conditioner in various crops or field conditions.

CAUTION



The tongue may be hot after operating. Do not touch the tongue!

CUTTING

IMPORTANT: Do not engage the PTO with the engine running at high speed or the pump drive can be damaged.

Slowly engage the PTO before the unit is moved up to the standing material. Be sure the tractor PTO is running at the standard RPM (540 to 1000) before starting to cut.

IMPORTANT: Operating at excessive PTO speeds can shorten machine life and cause structural failure.

A ground speed of 6 km/hr-8 km/hr (4 MPH-5 MPH) is satisfactory for many crop and field conditions. Higher speeds may sometimes be used when operating in a light crop. PTO speed must be maintained regardless of ground speed. When conditions make it necessary to slow ground speed, shift to a lower gear rather than reduce engine speed.

The first swath can be cut with the header on either side of the tractor. Cut the back swath in the opposite direction to pick up more of the crop that was run down by the tractor tires. Cut the back swath at a slower speed to pick up most of the crop.

1. To cut square corners:

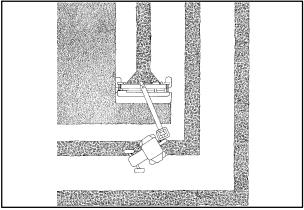
Start turning the tractor after the rear wheels pass the edge of the standing crop. At this time, swing the header toward the tractor, using the swing cylinder control lever and at a rate required to maintain straight line travel of the header to the end of cut.

Do not raise the header.

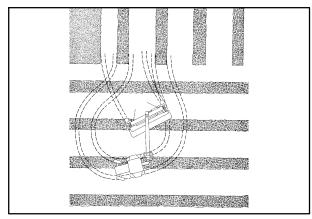
- When the turn is nearly completed, swing the header away from the tractor.
- With practice, corners can be cut without leaving standing crop.

2. To cut back and forth:

First cut three or four swaths around the field to open the field. Then cut back and forth on one side of the field. Raise the header after each swath and shift the header to the other side of the tractor while turning. With practice, the header can be shifted to the opposite side of the tractor in steps, during the turn, to make a short radius turn without missing standing crop.



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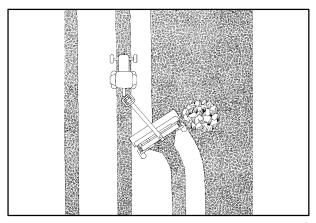
3. To maneuver around obstacles in the field:

- As the unit approaches the obstacle, swing the header towards the tractor, away from the obstacle. Be sure to allow enough time for the machine to pivot and track away from the obstacle.
- Straighten out the unit while passing the obstacle, to avoid running the header more than necessary into the previously cut crop. Once past the obstacle, swing the header fully back into the standing crop.
- On the next round, steer the tractor around the obstacle. While steering the tractor, swing the header towards the tractor to keep it following the cut line as long as possible. Center the unit behind the tractor while passing the obstacle. As the tractor exits the uncut crop, gradually steer the header away from the tractor to keep it in the standing crop.

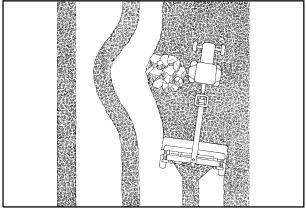
4. To cut oversquare corners:

- While approaching a sharply angled corner, gradually swing the header towards the tractor, to keep the unit positioned between the previously cut windrows. As the header comes out of the standing crop, raise the header and turn the tractor to the right; continue to swing the unit towards the left, as this will move the tongue away from the tractor tire to allow sharper turning.
- When the turn is nearly completed, swing the header away from the tractor so that it is aligned with the standing crop, and centered between the previously cut windrows. Lower the header into the crop, and gradually swing the header fully into the standing crop.

NOTE: Maintain full PTO speed when crossing previously cut windrows, even if the header is fully raised. Failure to do so may cause cutter bar and/or conditioner roll plugging.



3



CLEARING A PLUGGED CUTTER BAR OR CONDITIONER



A WARNING **A** –



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

CUTTER BAR PLUG

- 1. Stop forward travel and back up about 30 cm (1') with the header down and running.
- 2. If the reel does not clear the plugged cutter bar, raise the header about 15 cm (6") with the header running.
- 3. If the reel still does not clear the cutter bar:
 - Shut off the PTO.
 - Raise the header and engage the transport stops.
 - Shut off the engine and lock the tractor brakes or shift transmission to "park."
 - Clean the cutter bar.
- 4. If plugging continues, use this manual as a guide to check:
 - Cutter bar for bent, worn, or broken guards, sections or knife clips.
 - Reel belt tension.
 - Reel speed and reel position.
 - Tractor PTO speed.

Different ground speeds.

CONDITIONER ROLLS PLUG



MARNING



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

- 1. Stop forward movement of the tractor and shut off the PTO.
- 2. Raise the header and engage the transport stops. Shut off the tractor engine and lock the brakes or shift transmission to "park."

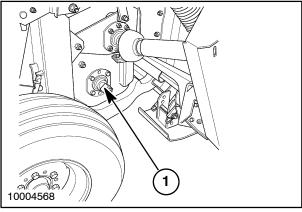


DANGER



Always engage the transport stops when working around a raised head or transporting the machine on the highway. Failure to comply will result in death or serious injury.

- 3. Clean off the cutter bar and the area under the
- 4. Pull as much material as possible from in front of and from behind the rolls.
- 5. Rotate the machine in the opposite direction of operation (reverse) by using an adjustable wrench on the lower roll hub, 1.
- 6. Clear all crop from in front of the conditioner rolls. Make sure no foreign objects are in the conditioner.
- 7. Start the tractor and, with the engine at 1/2 throttle, carefully engage the PTO.
- 8. If the rolls are still plugged, repeat steps 2 through 4. Remove all pressure from the rolls. Repeat steps 5 through 7 to clear the plug. Readjust roll pressure.



If plugging continues, use this manual as a guide to check:

- 1. Tractor PTO speed.
- 2. Reel position.
- 3. Condition of cutter bar, guards, knife sections, and knife clips.
- 4. Conditioner roll pressure.
- 5. Skid shoe and header tilt positions.
- 6. Header flotation.

PARKING THE MACHINE

When cutting is finished:

- 1. Disengage the tractor PTO. Park the machine on a level area.
- 2. Pivot the header to the center position and engage the spring-loaded lockpin.
- 3. Lower the header to the ground. Or, let the header rest on the transport stops.
- 4. Lower and lock the jack.
- 5. Remove the hydraulic pump from the PTO shaft and store the pump on the tongue.



DANGER A



Before disconnecting the lift cylinder hoses, be sure the header is resting on the ground or on the transport stops. Failure to comply will result in death or serious injury.

- 6. Disconnect the hydraulic hoses (swing and lift cylinders) and hang them so the ends do not get dirty.
- 7. Unhitch the tongue from the drawbar extension, then remove the extension from the tractor drawbar. Attach the extension to the tongue hitch, for storage.

FIELD ADJUSTMENTS

CUTTING HEIGHT

The cutting height is controlled by the skid shoe and cutter bar tilt settings. Five skid shoe positions, 1, are available to vary the stubble height from 25 mm-152 mm (1"- 6").



DANGER



Always engage the transport stops when working around a raised head or transporting the machine on the highway. Failure to comply will result in death or serious injury.

Remove the hairpin cotter and drilled pin to change skid shoe position. Always position left and right skid shoes in the same hole. In stony conditions, lower the skid shoes for a longer stubble to prevent cutter bar damage.



WARNING



If stones and other foreign objects are carried into the conditioner rolls, the objects can be deflected toward the operator, possibly resulting in physical injury or death.

NOTE: Readjust the header flotation springs after changing the skid shoes.

HEADER FLOTATION



🕰 WARNING 🕰

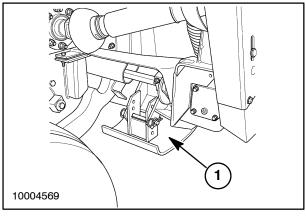


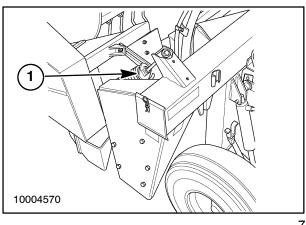
Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

IMPORTANT: Shift the tongue to the transport position and lower the header before checking or adjusting header flotation.

NOTE: In stony or rough field conditions, set the flotation lighter [23 Kg (50 Lbs.)] to protect the cutter bar. Use a slower ground speed in rough conditions to avoid excessive header bouncing and cutter bar damage.

Adjust the header flotation spring, 1, so 32 kg (70 lbs.) maximum starts to lift the header off the ground at either end of the push bar. Loosen the jam nuts and turn the spring bolts as required. Retighten the jam nuts.





CUTTER BAR ANGLE, FIXED LINKS



MARNING A



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

The cutter bar angle can be positioned for 4 degrees, 7 degrees, or 10 degrees below horizontal. The 7 degree position is satisfactory for most crop conditions. In down material, use the 10 degree position to pick up more material in stone-free, level fields. Use the 4 degree position in extremely rough or stony conditions where cutter bar damage is a problem.

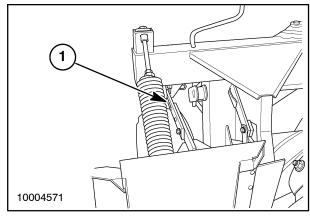
To change the cutter bar angle, loosen the bolts in the slots of the top header links, 1, on each side of header. Remove the bolts in the center holes of the links.

NOTE: Do not remove the bolts in the slots. Lengthen the top links for a steeper angle and shorten the links for a flatter angle.

After the links are adjusted, replace the center bolts. Tighten the other two bolts.

Be certain both links are set at the same position.

IMPORTANT: Recheck header flotation after changing the cutter bar angle.



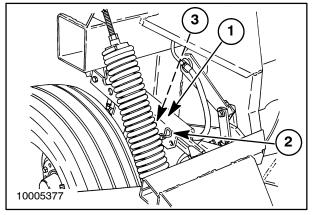
CUTTER BAR ANGLE, HYDRAULIC (OPTIONAL)

Optional hydraulic guard angle adjustment allows "on-the-go" cutter bar angle selections between 4 degrees and 10 degrees below horizontal. Also, the angle adjustment range can be locked at 4 degrees or limited to 7 degrees. The unit is equipped with two hydraulic tilt cylinders, 1. The cylinders operate in conjunction with the lift cylinders. When the tractor lift valve is operated the tilt cylinders retract, tilting the header back, the lift cylinders then raise the unit.

When the unit is lowered, the tilt cylinders will extend after the lift cylinders fully retract.

The header tilt can be limited to 3 positions by repositioning pin, 2. Tilt limiter pin can be repositioned with the header raised and the tilt cylinders fully retracted. Be sure to reinstall the retaining clip.

For minimum header tilt (fixed at 4), insert the pin through the rear plate hoses and the cylinder rod slot, 3. This position locks up the tilt cylinder, preventing the header from tilting.





🕰 WARNING 🕰



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

For mid position header tilt (between 4° and 7°), insert the pin through the middle plate holes and the cylinder rod slot, 1, as shown. This position allows the tilt cylinder to extend the length of the slot in the cylinder rod so the header tilts forward to a mid-position (7°).

For maximum header tilt (4° and 10°), insert the pin in the front plate holes, 2. This position does not restrict the tilt cylinder stroke, and allows the header to tilt forward to the lowest cutting height.

If a stone or obstacle is seen when the machine is being operated in the mid or maximum position, the header angle can be retracted to minimum tilt position without lifting the header. Just move the tractor valve to the raise position long enough to retract the tilt cylinder. After the obstacle is passed extend the cylinder by moving the tractor lever to the lowering position.



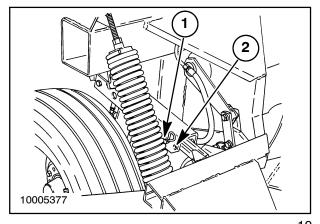
WARNING A



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

REEL ADJUSTMENTS

The factory settings of reel position and reel speed are satisfactory for many crops. The reel adjustment chart lists unusual crop conditions which may require changing reel position or reel speed for better cutting.



REEL ADJUSTMENT CHART					
UNUSUAL CROP CONDITION	REEL POSITION	REEL SPEED			
Crop down or lodged	Down and forward	Slightly faster than normal			
Wet or dead material collects on cutter bar	Down (Close to guards)	Normal			
Short Crop	Back	Normal			
Light and dry or fluffy crops	Normal	Normal (or slower)			
Cane-type crop	Forward	Normal (or slower)			

REEL POSITION



WARNING

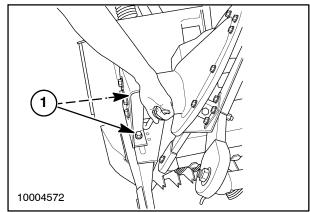


Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

The reel is set at the factory for normal crop conditions. Adjustment slots allow different reel positions for unusual crop conditions.

To move the reel forward or back, place a long punch or pry bar in the holes in the side sheet to move the reel. Loosen bolts, 1, and move the reel. Tighten the bolts. Move the opposite end of the reel to the same position.

IMPORTANT: The reel drive belt must be loosened before moving the reel.



11

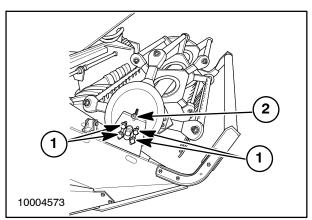
To move the reel up or down, loosen four bolts, 1, and adjust bolt, 2. Then tighten the bolts. Move the opposite end of the reel to the same position.

IMPORTANT: Never lower the reel to the point where the tines dig into the ground or touch the guards.

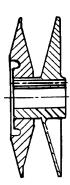
For short crops, move the reel rearward and raise it as required for more clearance at the guards and header frame floor. This will reduce carry-over of material.

Make certain the reel is parallel with the header frame and the tines are equally spaced above the cutter bar. Tighten all hardware securely. Adjust the reel belt tension as detailed in the "Reel Drive Belt" portion of this section.

Check and readjust header flotation as described in the "Header Flotation" portion of this section.

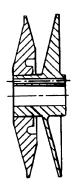


REEL SPEED CHART



	Sta	Standard Sprocket		Reduction Kit			
# of		Effective Tine Tip Speed -			Effective Tine Tip Speed -		
Turns	RPM	MPH	(km/hr)	RPM	MPH	(km/hr)	
0	40.2	4.78	(7.69)	33.9	4.02	(6.47)	
1	43.8	5.21	(8.38)	36.9	4.39	(7.06)	
2	47.3	5.63	(9.05)	39.8	4.74	(7.63)	
3	50.7	6.03	(9.70)	42.8	5.10	(8.21)	

Illustrations show "0" turns. Top and bottom views illustrate position of outer (left) sheave half for high and low speed ranges.



	Standard Sprocket			Reduction Kit			
# of		Effective Tine Tip Speed -			Effective Tine Tip Speed -		
Turns	RPM	MPH	(km/hr)	RPM	MPH	(km/hr)	
0*	55.6	6.62	(10.65)	46.9	5.56	(8.95)	
1	59.1	7.03	(11.31)	49.8	5.92	(9.52)	
2	62.7	7.46	(12.00)	52.8	6.28	(10.10)	
3	66.2	7.88	(12.68)	55.7	6.63	(10.67)	
*Shipped pe	osition						

REEL SPEED

For most crops, the reel speed should be approximately 10% faster than ground speed. Example: The reel speed chart shows the machine as shipped from the factory with the outer sheave flush with the hub. This provides a tine tip speed of 10.6 km/hr (6.6 MPH). The tractor ground speed would be approximately 9.7 km/hr (6 MPH). These are only guidelines. Different crop conditions may require other adjustments.



M WARNING **A**



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

The reel speed chart shows the various reel speeds resulting from rotating the outer sheave half on the inner hub. Another range of reel speeds results if the outer sheave half is turned so the belt rides on the "low side," small diameter flange. Speeds are listed for the standard 19-tooth or optional 16-tooth reel speed reduction sprocket. These sprockets are on the outer side of the left sickle drive gearbox. The optional reel speed reduction sprocket is available from the parts department at your local New Holland dealer.

Optional Speed

Optional Speed Daduation Kit

To increase the reel speed, remove the cap screw and clip at 1, and rotate the outer sheave half, 2, in a clockwise direction.

For a lower range of speeds, remove the outer sheave half and turn the low side in toward the belt.

NOTE: Do not turn the sheave half out past flush with the hub.

IMPORTANT: When installing the cap screw and clip at 1, be certain to reuse the two lock washers under the clip. These serve as spacers to allow the clip to float.

After adjusting reel speed, check the reel drive belt tension as detailed in "Reel Drive Belt."

REEL DRIVE BELT



🛕 WARNING 🛕



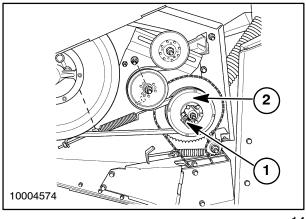
Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

The reel drive belt, 1, must be tensioned to slip if the reel hits a foreign object in the field or if the reel is overloaded.

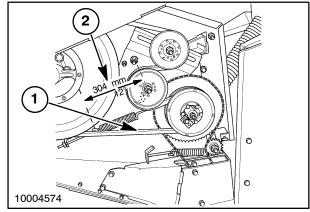
Adjust the eyebolt for a spring length of 304 mm(12") between spring hooks as shown at 2.

NOTE: Belt tension must be adjusted after the reel speed or position is changed.

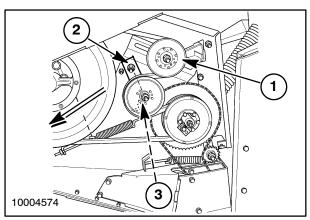
Depending on the location of the reel or as the belt stretches, it may be necessary to move stationary idler, 1, so idler arm, 2, is perpendicular to the spring. The arm should clear stop, 3, by a minimum of 13 mm (1/2"). If clearance is less than 13 mm (1/2"), readjust idler, 1, as required. Readjust the idler arm spring to 304 mm (12") hook-to-hook.



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PUSH BAR

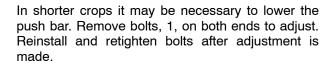
The push bar,1, should normally be set in the highest position as shown.



WARNING A



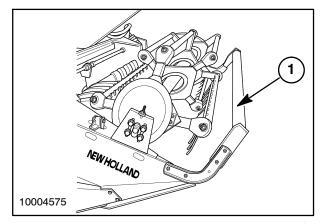
Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.



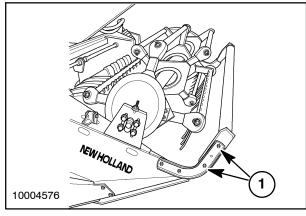
Turn the push bar end for end and upside-down if the crop is very short.

Adjust the push bar to push the material forward regardless of how high the crop is.

NOTE: The push bar must be in the highest position to install the optional crop dividers. Do not adjust the push bar so low that the reel catches crop before it is cut off, or the push bar will bend.



17



THEORY OF OPERATION

ROLL CONDITIONING

Roll conditioning passes the cut crop through a set of closely spaced intermeshing rolls with matching lands and valleys. The rolls crush and crack the plant stem at several points along its length, which wears away the waxy coating and allows moisture to escape.

There are two rolls in roll conditioning.

The lower roll is fixed in the machine.

The upper roll can pivot to let the crop mat feed through the rolls without plugging.

Roll gap and roll tension affect crop conditioning.

See below for more information.

Roll Gap

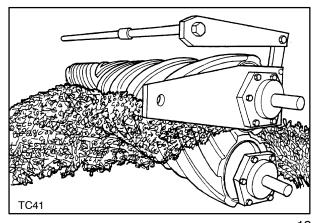
The roll gap is the space between the land of one roll and valley of the opposite conditioning roll. This space should be kept between 0.4 mm - 3 mm (1/64 in. -1/8 in.) to provide the best performance.

To check the roll gap easily and quickly in the field, use the "one stem method". Take one stem of the crop being cut and pass it between the rolls at three or four points across the roll width. The stem should move between the rolls, but with some resistance. If the stem passes through the gap with little or no resistance, the gap should be reset closer (see Section 2 – Operation). If you cannot pass the stem between the rolls at all, the gap should be increased slightly. To get peak machine performance and efficiency, check the roll gap before each cutting during the season, and also when cutting different forage crops because each crop will be different.

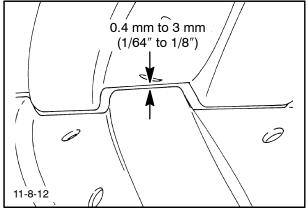
In high volume crops like Sudan grass and other cane-type crops, increase the roll gap slightly to get better crop flow through the rolls without sacrificing good crop conditioning. The lands and valleys should be centered to maintain a uniform distance on all sides of the lands.

Roll Tension

After setting the roll gap, adjust the roll tension. Roll tension is the amount of pressure added to restrict upper roll movement as the crop feeds through the rolls. Hard-to-condition crops require more tension. Light and easily-conditioned crops require less tension. Higher roll tensions increase the pressure exerted on the crop mat as it moves between the lands and valleys, increasing the ability of the rolls to crack and wear the stem away. Higher roll tensions result in more aggressive crop conditioning because the rolls become more resistant to spreading apart as the crop is fed through.



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Torsion Bar Tensioning System

The torsion bar tensioning system maintains uniform pressure throughout the range of roll movement as the crop mat passes through, providing better control and reducing potential crop plugging. In most conditions, a good starting point for tension on intermeshing rolls is to increase the roll tension by turning the adjusting crank 8 full turns after you start to feel resistance on the crank handle.

Too large a roll gap or too little roll tension under-conditions the crop, resulting in extended dry down times and increased potential for weather-related damage. Too close a roll gap or too much roll tension can severely over-condition the crop, breaking the tops away from the plants and causing excessive leaf loss. It can also cause excessive wear of the conditioning rolls if they touch while turning.

Properly Conditioned Crop

Properly conditioned crops will show a pattern of cracks at regular intervals along the plant stem. Each

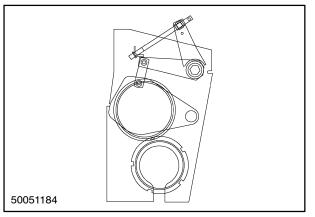
crack will be about 25–50 mm (1–2 in.) in length. The stem should look flat in these cracked areas. Depending on crop height when cut, there will be at least two or three cracks along the plant length. The plant leaves should show only minimal bruising. Leaf bruising is characterized by dark green streaks or marks across the leaf surface. While some leaf bruising can't be avoided, too much bruising is not good because the bruises allow moisture to escape the leaf. When this occurs, the leaf dries too quickly, resulting in loss of the plant leaf before or during packaging. This in turn reduces the overall feed value of the crop.

Checking Crop

As a general check, grab a handful of crop directly behind the machine after it has been processed and hold it in one hand. The plant stems should be fairly limp and just fold over your hand. Nine out of 10 stems in a random sample should show stem cracks. Inspect the leaves in the same random sample, and no more than 5% of the leaves should have bruising.

Rolls in Home Position

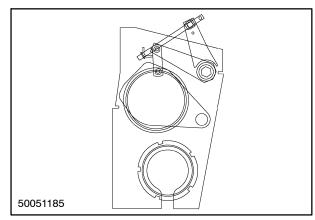
Rolls are at zero degrees (home position). Link is straight. This allows full pressure of torsion bar to be applied to top roll arm.



21

Rolls Open at 15 Degrees

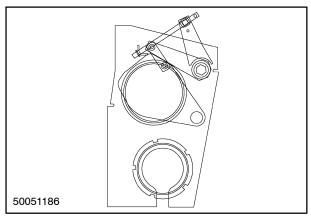
Rolls begin to open as crop enters conditioning system. Link starts to bend to rear while torsion bar maintains conditioning pressure.



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Rolls Fully Open at 27.3 Degrees

Rolls are now fully open due to crop slug or foreign object entering rolls. The link between torsion bar and top roll arm is no longer applying direct pressure to roll arm. Rolls are against stop link back with conditioning pressure now removed. Rolls will return to former position (with preset conditioning pressure) when object or slug passes through.



CONDITIONING

For legume-type crops, such as alfalfa and clover, about 90% of the stems and 5% of the leaves should show some conditioning action. The stems should only be cracked with minimum leaf damage. Overconditioning will cause the leaves to dry faster and break off where they are damaged. Overconditioning will also increase horsepower requirements and cause faster drive wear.

To increase the roll pressure, remove hairpin cotter, 1. Turn crank, 2, in a clockwise direction.

Replace the hairpin.

NOTE: Increasing roll pressure will not set the rolls closer together. It will only increase pressure needed to separate rolls.



The swath gate inside the windrow shield assembly controls the swath width. Position handle, 1, in the desired location.

Lowering the handle produces a wider and generally fluffier swath. If the gate is positioned too low in some crops, an uneven swath may be formed. In heavy crops, raise the handle one or two positions to allow enough room for the crop to discharge behind the rolls.

To windrow the material, raise the swath gate handle, 1, to the highest position.



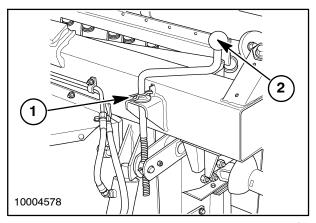
WARNING



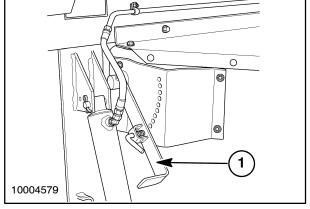
Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

FLUFFING BAFFLE

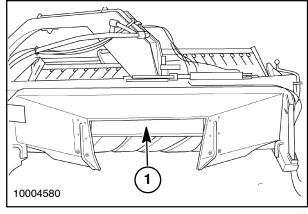
Adjust the windrow baffle, 1, downward to make fluffy, fast-drying windrows. In lighter crops or bunchy uneven windrows, raise the baffle to a higher position. Loosen the two cap screws at each side of the baffle hinge to make the adjustments. Retighten the cap screws.



24



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ROLL GAP

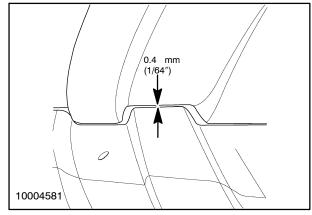
IMPORTANT: The rolls must not contact each other at any point or damage to the rolls and header frame may result. Adjust roll to a minimum of 0.4 mm (1/64") clearance at the closest point of the rolls...

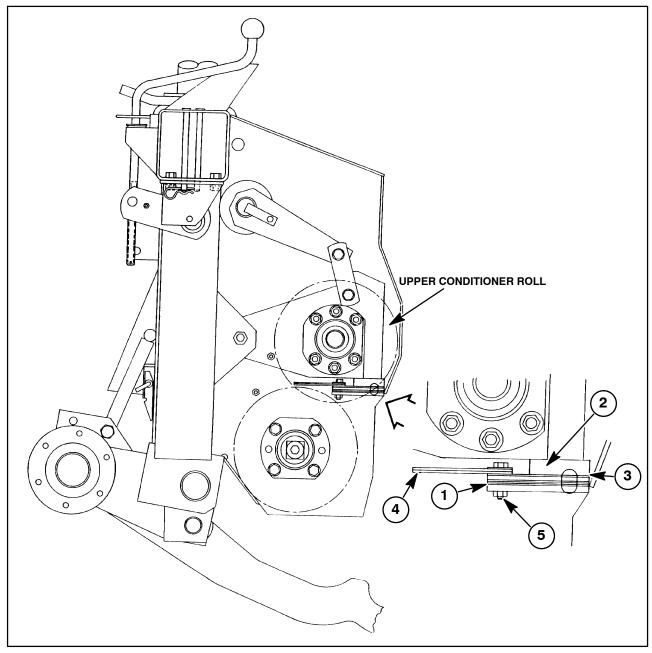


MARNING A -



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.





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- 1. Shims (as required)
- 2. Upper roll arm
- 3. Pad (rubber on bottom, steel on top)
- 4. Extra shim storage
- 5. 5/16" x 3/4" Grade 8 cap screw, lock nut

The roll gap is set at the factory for normal crop conditions. When conditioning thick-stemmed canetype crops, add more shims at 1, on the right side and a similar location on the left side. Shims can be obtained from your New Holland dealer.

Install pad, 3, so the steel is on top and the rubber is on the bottom. Shims to adjust roll gap are below the

pad. Extra shims can be turned to the rear and stored on the bolts at 4.

After the rolls have worn from heavy or prolonged use, it may be necessary to remove shims to maintain 0.4 mm - 3 mm (1/64" - 1/8") clearance between the rolls.

CUTTING GRAIN FOR SILAGE OR HAY

Rye, oats, barley, or wheat are often cut for silage or hay. These crops should feed through the header and conditioner, without problems, if the crop is taller than 1 m (36"). If these crops are shorter or not fully headed, the crop may stop or bunch up between the reel and conditioner rolls. Back up about 300 mm (12") and raise the header partway to help feed large bunches through the conditioner rolls.

If the grain is too stiff stemmed and slippery, it will not lay down in front of the rolls and feed through smoothly. If ground speed is too slow, or the operator has to stop too often, make the following adjustments:



MARNING .

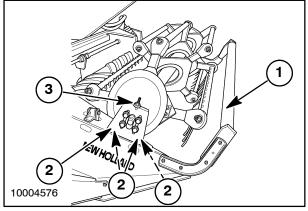


Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

1. Move push bar, 1, down.

IMPORTANT: Do not set the push bar too low. Long stems may become tangled in the reel before they are cut off, and the push bar or reel could be damaged.

- 2. Move the reel back at 2, and down at 3, so the reel is close to the rolls and header floor pan. If the cutter bar plugs, set the reel within 6 mm (1/4") of the top of the guards.
- 3. If plugging at the cutter bar is not a problem, reduce the reel speed. Be sure the reel drive pulley is set at the lowest speed.
 - If the cutter bar is not plugging, install the optional "Reel Speed Reduction Sprocket" for cutting grain crops.
- 4. Tilt the header back so the header is close to the conditioner rolls. The upper header links can be adjusted shorter or the drilled pin can be set in the rear hole of the optional "Hydraulic Guard Angle Adjusting Kit."
- 5. Extend the lift cylinders 50 mm to 75 mm (2" to 3") to raise the trail frame. Material will feed lower on the bottom roll.
- 6. Reduce conditioner roll pressure. Add additional shims at the roll stops.
- 7. Try different ground speeds to get uniform feeding to the rolls and acceptable stubble length.
- 8. Taller, more mature crops may feed through the header without bunching in front of the rolls.



SECTION 3 LUBRICATION

Complete all checks and services in this section at the hour interval shown.

IMPORTANT: Failure to complete the required maintenance at the interval shown can cause unnecessary downtime.

The recommended lubrication intervals are for average conditions. Perform lubrication more often when operating the unit under adverse conditions.

The lubrication items in this section are listed by hour intervals. All items within a particular hour interval are listed in a logical sequence.



WARNING **A**



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

1. Disengage the header drive.

- 2. Lower the header to the ground or raise the header and engage the lift locks.
- 3. Stop the tractor engine and engage the parking brake before leaving the cab.
- Reinstall and close all shielding before operating the mower-conditioner.

Wipe dirt from grease fittings before greasing.

Always clean the area around the dipstick, cap, or plug before checking any fluid levels. Allowing any contamination to enter will cause damage to the system. Drain, flush, and refill the system anytime you suspect it is contaminated.



WARNING



Some pictures in this manual show shields removed to show the parts being serviced. Replace all shields before running the machine. Failure to comply may result in death or serious injury.

Apply motor oil to hinges, linkages, and other pins at regular intervals.

LUBRICATION SCHEDULE

	EVERY 10 HOURS	AFTER FIRST 50 HOURS	EVERY 50 HOURS	EVERY 100 HOURS	EVERY 400 HOURS
Oil reel drive chain	Х				
Reel shaft bearing rods (2 fittings)	Х				
Sickle drive connecting rods (2 fittings each side)	Х				
Reel intermediate drive shaft	Х				
Lower header arm pivots (2 fittings)	Х				
Wheel arm pivots (2 fittings)	Х				
Left upper roll drive shaft (3 fittings)	Х				
Right sickle drive shaft (3 fittings)	Х				
Sickle drive sheave hub (1 fitting)	Х				
Grease the tractor PTO shaft and pump splines			Х		
Jack (1 fitting)			Х		
Roll pressure trunnion (1 fitting)			Х		
Tongue pivot (1 fitting)			Х		
Oil the tongue latch pin			Х		
Hex shaft bearing (1 fitting)			Х		
Check hydrostatic oil level (20 gal. capacity)			Х		
Check header drive gearbox oil level				Х	
Lower roll drive shaft (1 fitting)				Х	
Check sickle gearbox oil level (2)				Х	
Check wheel bearings					X
Replace hydrostatic oil filter		Х			X

FLUIDS AND LUBRICANTS

Lubricants

Effective use of lubricating oils and greases is perhaps the most important step toward low upkeep cost, long mower-conditioner life, and satisfactory service. Use only the lubricants specified. Apply them at the intervals listed in this manual.

Greases

SAE multipurpose-type grease is recommended for all grease fittings. Wheel bearing grease is recommended for the wheel bearings. Application of grease as detailed in this section will provide proper lubrication and will keep contamination out of the bearings.

TYPE AND QUANTITY OF OIL USED

Main drive gearbox:

Lubricant: SAE 80W-90 Lube Class: GL 5

Sickle drive gearboxes (2):

Lubricant: SAE 80W-90

Lube Class: GL 5

Hydrostatic reservoir:

Lubricant: Ambra Multi G 134 or Ambra 134D

hydraulic oil

Capacity: 75.7 L (20 gal.)

Lubrication fittings:

Lubricant: Lithium based EP high-temp grease

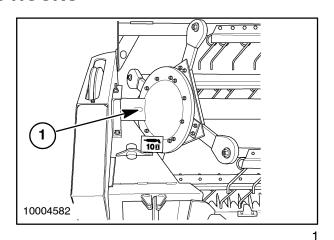
STORING LUBRICANTS

The pivot tongue mower-conditioner can only operate at proper efficiency if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination.

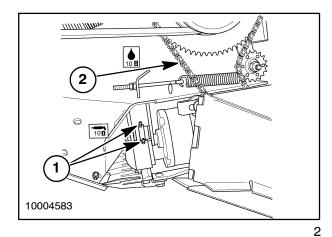
IMPORTANT: Keep lubricants clean! Use only high-grade lubricants which have been stored in clean containers. Wipe away all grease and dirt before removing filler caps or plugs.

EVERY 10 HOURS

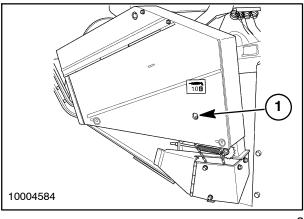
1 Reel shaft bearing - 2 fittings (Left side shown)



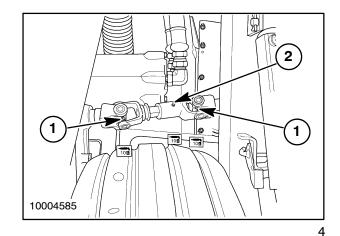
- 1 Sickle drive connecting rod 4 fittings (Left side shown)
- 2 Oil the reel drive chain



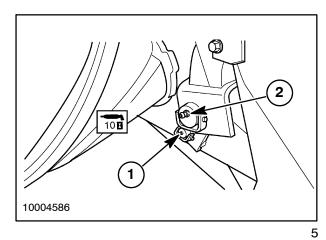
1 Reel intermediate drive shaft



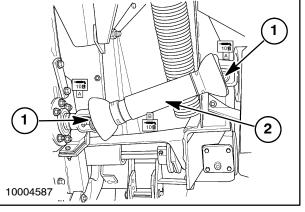
- 1 Left upper roll U-joints 2 fittings
- 2 Left PTO telescoping section



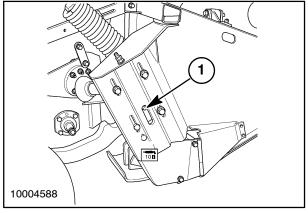
- 1 Header lift arm pivots 2 fittings (Right side shown)
- 2 Wheel arm pivots 2 fittings (Right side shown)



- 1 Right sickle drive U-joints 2 fittings
- 2 Right PTO telescoping section



1 Header drive sheave hub

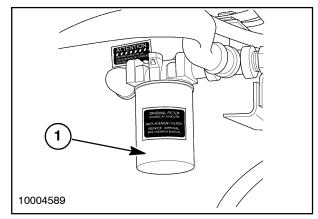


7

AFTER THE FIRST 50 HOURS

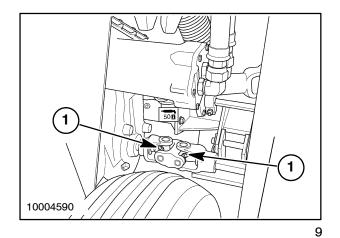
Hydrostatic oil filter, 1.

Change the hydrostatic oil filter after the first 50 hours of use. Any contamination remaining in the system should have been loosened and filtered out. The remaining oil is clean and the system should operate without problems if the filter is changed at 400-hour intervals or once each season. Replace oil which is lost when the filter is changed. The filler cap/dipstick is in the top of the tongue.

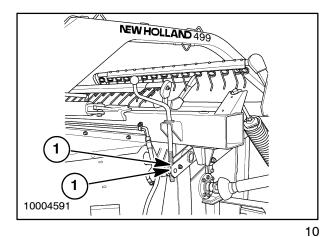


EVERY 50 HOURS

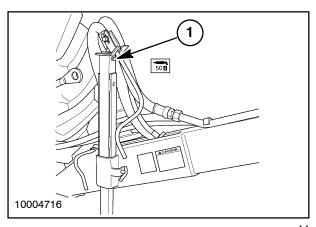
1 U-joint drive, gearbox to lower roll - 2 fittings



1 Roll pressure crank trunnion and threads



1 Jack assembly, if equipped with this style jack



- 1 Tongue pivot 1 fitting
- 2 Oil the tongue latch pin

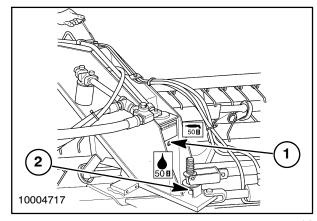
HYDROSTATIC RESERVOIR OIL LEVEL

IMPORTANT: Park the mower-conditioner on level ground, and lower the header before checking oil level in the tongue reservoir. Clean trash and dirt from the area around the dipstick.

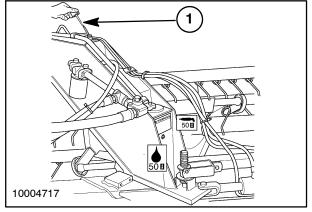
IMPORTANT: Be sure the top of the tongue is level, and remove the dipstick slowly to allow air (pressure) to escape.

Remove the dipstick, 1, and wipe it with a clean cloth. Reinstall the dipstick finger tight and remove it to check oil level. The oil level should be in the crosshatched area on the dipstick.

If the oil level is low, add Ambra Multi G 134 Hydraulic oil to the tongue reservoir until the oil level is between the marks on the dipstick. Replace the dipstick and tighten with a wrench. The reservoir holds approximately 75.7L (20 gal.).



12

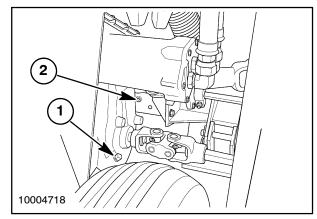


13

LEFT SIDE DRIVES

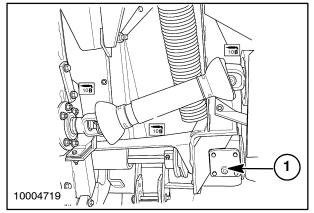
Lower the header.

Add API GL-5 80W-90 gear oil as needed to keep oil level with the bottom edge of the check plug hole, 1, for the main gearbox and 2, sickle drive gearbox. (Use a hand pump or oil can to add oil to the left sickle drive gearbox).



RIGHT SIDE DRIVES

Add API GL-5 80W-90 gear oil as needed to keep oil level with the bottom edge of the check plug holes, 1, in the sickle drive gearboxes.



15

1 Hex shaft bearing

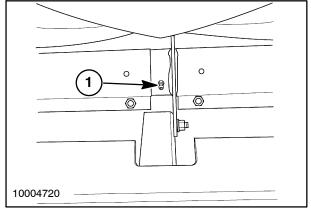
This is located under the header just forward of the lower conditioner roll.



DANGER



Always engage the transport stops when working around a raised head or transporting the machine on the highway. Failure to comply will cause death or serious injury.



SECTION 4 MAINTENANCE

GENERAL INFORMATION

Complete all checks and services in this section at the hour interval shown. Use the hour meter in the tractor as a guide for determining when maintenance is required.

IMPORTANT: Failure to complete the required maintenance at the interval shown can cause unnecessary downtime.

The recommended maintenance intervals are for average conditions. Perform maintenance more often when operating the unit under adverse conditions.

The maintenance items in this section are listed by hour intervals. All items within a particular hour interval are listed in a logical sequence.

Always clean the area around the dipstick, cap, or plug before checking any fluid levels. Allowing any contamination to enter will cause damage to the system. Drain, flush, and refill the system anytime you suspect it is contaminated.



- 🕰 Warning 🕰



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

DAILY MAINTENANCE

Careful inspection and service of the unit prior to operation each day will prevent needless breakdowns and delays in the field. Make the following checks and adjustments.

- 1. Check all belt drives and chains carefully for proper alignment and tension. Belts can be ruined very quickly if allowed to slip in the grooves of a sheave for any length of time. Excessive heating of a sheave is an indication of belt slippage. New belts will stretch during the first several hours. Check tension frequently.
- Tooth wear on the side of a sprocket indicates chain misalignment.
- 2. Be alert to loose hardware and tighten or replace as required.
- 3. Lubricate the unit according to the instructions in Section 3 of this manual, being sure to check the gearbox oil levels as noted there. Under adverse conditions, shorten the lubrication intervals.
- 4. Clean out any buildup of debris from the header lift cylinder area.

PRESEASON MAINTENANCE

Prior to beginning the harvest after winter storage, take the following steps to be certain the unit is in good condition.

- 1. Completely lubricate the unit (all grease points, oil points, and fluid levels as noted in Section 3).
- 2. Check all belt and chain tensions and alignments as detailed later in this section. Replace severely worn chains and belts.



A WARNING A



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- 3. Have someone start the unit and engage the header. Carefully walk around the unit while it is running at a slow speed. Look for abnormal movements of components and listen for unusual noises.
- 4. Check the controls for proper function. Pivot points of linkages often become stiff from rust during the off-season.

END-OF-SEASON MAINTENANCE

Prior to storing the unit during the off-season, follow these steps to ensure easier preparation of the machine for the next season and longer machine life.

- 1. Store the unit in a shed to protect it from the elements.
- 2. Coat all bare metal (except sheave walls) with engine oil or a rust preventive.
- 3. Retract all cylinders and coat the remaining ram surfaces with grease.
- 4. Completely lubricate the unit. Oil the linkage pivot points as noted in Section 3.
- 5. Release the tension from all belts.

BELT AND CHAIN MAINTENANCE

V-BELT CARE AND MAINTENANCE

Drive belts transmit power by friction and a wedging action against the sheaves. Belts and sheaves are therefore subject to wear and should be checked daily. Wear is normal if it is even along both sides of the belt for its entire length and even along the inside circumference of the sheave.

IMPORTANT: Check all V-belts every five hours of operation for the first 50 hours of operation. Adjust for initial stretch.

Whenever unusual belt or sheave wear is noticed or a belt breaks, immediately check for the cause. The cause is usually too little belt tension, a shock load, or a pluggage.

NOTE: Only a very few failures are caused by a defective belt.

The sides of the drive belts should always have a dull appearance. A belt that has shiny sides has been slipping and will eventually have to be replaced. Continued operation will cause more slippage. Stress cracks will then occur along the belt due to the excessive heat buildup. The use of "belt grip" products is not recommended. These products generally only give very temporary gripping action while causing further deterioration of the belt.

Over tightening the belt can cause it to snap in half if a sudden heavy load is applied to the drive.

If a driven sheave stops due to a plugging problem, the drive sheave may burn a section of the belt. The drive may then vibrate because of a narrow burned spot. Replace the belt immediately to prevent other problems.

Vibration can also be caused by a lumpy V-belt. Check belts for swells and lumps. Use only factory recommended V-belts of the proper length.

NOTE: A slight raveling or peeling of the belt at the lap does not indicate premature failure. Cut off the raveling if the covering peels at the lap. Check for the cause of unusual belt wear before replacing the belt.

BELT INSTALLATION

IMPORTANT: Never pry the belt over the edge of the sheave, as this may rupture belt cords and shorten belt life. Place the belt in the sheave groove by hand.

V-BELT CLEANING

Clean belts by wiping them with a clean cloth. Immediately wipe off any spilled oil or grease. Do not use solvents because they will soften the belt.

SHEAVE DEFECTS

Examine sheaves for bent or chipped sidewalls, and check for excessive sidewall wear. Damaged sheaves cause rapid belt wear. A bent belt sheave reduces the gripping power of the belt. Immediately replace sheaves having any of these defects.

DIRTY SHEAVES

Check to be sure dirt has not lodged and packed in the sheave V-grooves. Excessive vibration may be caused by dirt collecting inside the sheaves. Remove dirt from the sheaves.

CARE OF CHAINS

Drive chains should be checked and lubricated daily.

Maintain correct tension. Over tightening stretches the chain and exerts excessive side loads on sprockets, shafts, and bearings. A loose chain will slap and climb the sprocket teeth causing excessive wear.

Remove or add links to the chain if the correct tension cannot be maintained with the available adjustment mechanism. Drive chains are not normally worn out until they have stretched 3%.

Chains may be oiled at the beginning of the day or at the end of the day. Oiling the chains at the beginning of the day's operation may be more convenient, but oiling the chains when they are warm does more good. This allows oil to penetrate into the rollers and between the side bars.



A WARNING A



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

Exposed chain drives should be cleaned regularly. Remove and clean the chains by soaking them in diesel fuel overnight. Dry the chain, then oil it thoroughly.

Before starting the unit, clean the chains and lubricate them with a heavy oil or grease. When removing the unit from storage, reclean the chains and lubricate them with SAE 30W oil.

SPROCKET ALIGNMENT

Be certain all sprockets composing a drive are properly aligned. Drive or driven sprockets may be moved in or out on shafts for proper alignment. Tightener sprockets may be aligned by increasing or decreasing the number of washers behind the sprocket hub. Inspect sprockets frequently to make sure teeth are not worn enough to damage the chain.

BELT AND CHAIN TENSION

Check belt and chain tension daily. Recommended belt and chain tensions are given in terms of the amount of deflection at a given force. This means a belt should deflect a certain amount when a certain amount of force is applied midway between the two sheaves.

The same method is used to check drives which use an idler. Be sure, however, to check the deflection on the belt or chain opposite the idler.

Some drives incorporate a spring length setting. The proper tension is obtained when the length of the spring is adjusted to the proper length.

MAINTENANCE SCHEDULE

NOTE: The items listed at the first 5 hours and first 50 hours are very important. If they are not performed, it could cause early failures of components and severely lower the life expectancy of the unit.

DESCRIPTION	AFTER FIRST 5 HOURS	EVERY 10 HOURS OR DAILY	EVERY 50 HOURS OR WEEKLY	EVERY 400 HOURS OR YEARLY
Inspect and tighten hardware	Х			
Check reel drive belt tension	Х		Х	
Check reel drive chain tension	Х		Х	
Check sickle drive belts tension	Х		Х	
Check wheel bolts – 150 N·m (115 ft. lbs.)	Х		Х	
Check tire pressure – 193 kPa (28 psi)			Х	
Check cutter bar guards, knife sections, and repair as needed		Х		
Check conditioner roll clearance	Х			Х
Check conditioner roll timing				Х

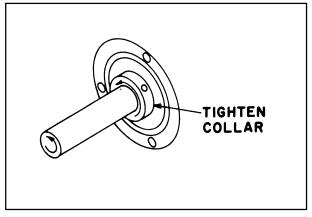
BEARING INSTALLATION

When installing a new bearing, clean the shaft, and remove paint from the surface of the flangettes which will contact the bearing.

Install a flangette, bearing, flangette, and the lock collar in the correct order. Install the flangette bolts. Leave the bolts slightly loose so the bearings can move into alignment.

When the shaft and bearing are located correctly, tighten the flangette bolts.

Tighten the locking collar last in the direction the shaft rotates, as shown. Tighten the setscrew in the locking collar.



BELTS AND CHAINS



WARNING A

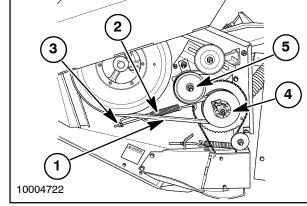


Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

IMPORTANT: Check the adjustment of all belts and chains after the first five hours of operation and then after every 50 hours' use.

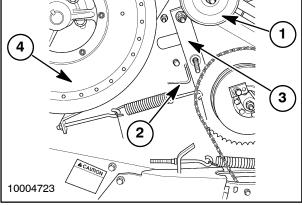
REEL DRIVE BELT

- 1. Reel drive belt
- 2. Idler spring
- 3. Eyebolt, two 3/8" hex nuts
- 4. Reel vari-drive sheave
- 5. Flat idle



2

- 1. V-idler
- 2. Stop
- 3. Flat idler arm
- 4. Reel pulley

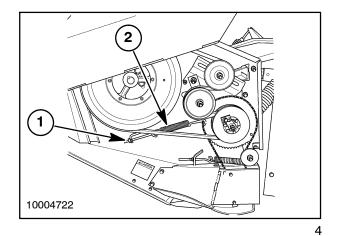


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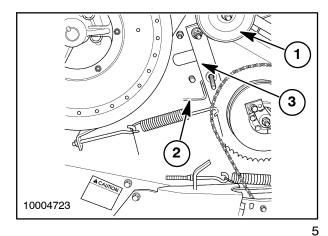
IMPORTANT: Reel belt tension must be readjusted after the reel speed or reel position is changed.

The reel drive belt must be tight enough to keep the reel turning at a steady speed in heavy crops. The belt must be loose enough to slip and protect the reel from damage by large rocks, tree limbs, or big wads of hay.

Adjust eyebolt and nuts, 1, so idler spring, 2, measures 305 mm (12") between the hooks.



When idler spring is adjusted to 305 mm (12"), idler arm, 3, should clear stop, 2, by about 13 mm (1/2"). Move the V-idler, 1, back for more clearance. The idler arm must not touch the reel chain.



A

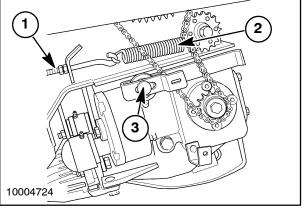
WARNING



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

REEL DRIVE CHAIN

Adjust eyebolt, 1, so idler spring, 2, measures 178 mm (7") between the hooks. Adjust bolt, 3, so the nylon idler is 3 mm (1/8") from the chain.





A WARNING A



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

SICKLE DRIVE BELTS

Eight pounds force applied to one belt should deflect the belt 4.8mm (3/16") at mid-span. (3.6 kg deflects 5 mm.)

To tighten the drive belts:

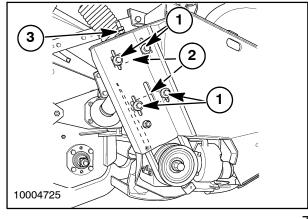
1. Loosen four bolts, 1.

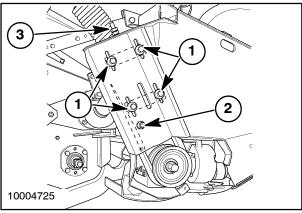
IMPORTANT: Shims, 2, on these four bolts are used to line up the pulleys. The shims are located between the frame and mount for the upper pulley. If the shims are misplaced, check pulley alignment with a straightedge. Correct any misalignment with the shims. The number of shims at the top and bottom may be different.

- 2. Use nuts on adjusting bolt, 3, to tighten the belts.
- 3. Tighten bolts, 1, and lock the nuts, 3.

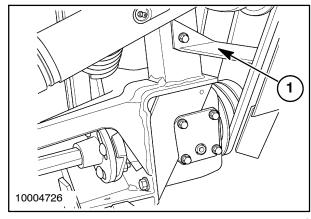
To replace the sickle drive belts:

- 1. Loosen bolts, 1. Check the number of shims at the top and bottom bolts.
- 2. Loosen the belts with adjusting J bolt, 3.
- 3. Remove bolt, 2.



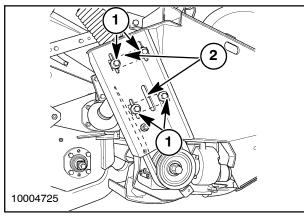


4. Remove brace, 1.



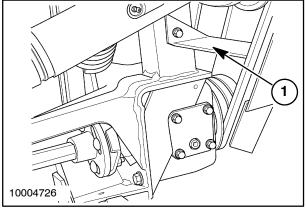
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- 5. Remove bolts, 1. Note location of shims, 2, so they can be replaced in the original position. Pull the pulley mount away. Remove the old belts and install the new ones.
- 6. Replace bolts, 1, and shims, 2. Check pulley alignment. Adjust the number of shims at the top or bottom to correct misalignment.

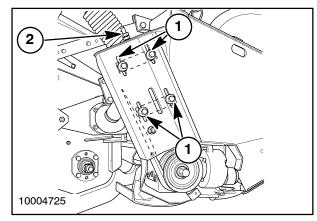


10

- 7. Replace brace, 1.
- 8. Tighten the belts. 8 lbs. force deflects one belt 4.8 MM (3/16") (3.6 kg deflects 5 mm).



9. Tighten bolts, 1, and nuts, 2.



CUTTER BAR MAINTENANCE



DANGER A



The header may fall rapidly if the hydraulic lift system should fail. Always engage the lift cylinder transport stops when working around the raised header. Failure to use transport stops may result in serious injury or death.



WARNING



Always wear protective safety glasses when working on the cutter bar to protect your eyes from metal chips, chaff, or dirt.

IMPORTANT: Many mower-conditioner problems are caused by improper adjustment or poor maintenance of the cutter bar.

CUTTER BAR

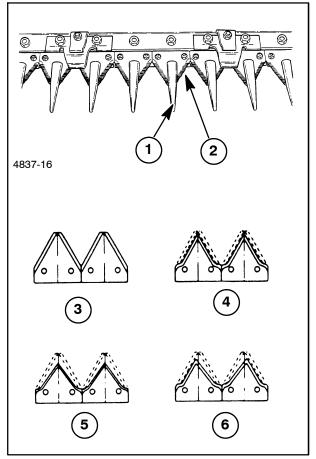
The cutter bar is like a pair of shears. The cutting edges of the guards, 1, and knife sections, 2, must be sharp and close together for smooth, clean cutting.

Shown is a cutter bar with standard guards. Optional stub guards are available for use in difficult cutting conditions. The stub guards do not protect the front of the knife sections. The stub guards require sharp knifes, frequent alignment and adjustment of the hold down clips. Refer to the "Stub Guard" portion of Section 6, Optional Equipment, of this manual for additional information.

IMPORTANT: Black, overserrated, fully-bolted knife sections are original factory equipment on Model 499 mower-conditioners, serial number 539686 and above. Below serial number 539686, black, underserrated, riveted sections were original equipment. Purchase parts from your New Holland dealer to convert older machines to fully-bolted knife assemblies.

Overserrated sections stay sharp longer than smooth or underserrated sections and cause less wear to cutting edges of guards. Resharpening will remove the overserrations.

Underserrated sections can be resharpened, but do not stay sharp as long and may cause faster guard wear.

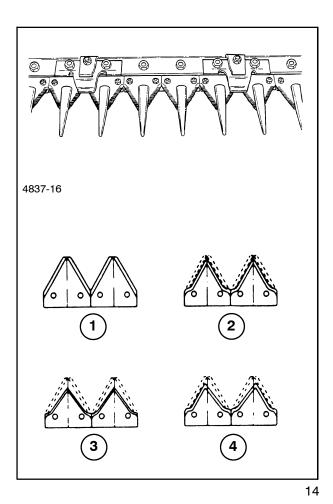


Smooth sections provide good cutting action in grass hay, but require resharpening, good guards, and frequent knife clip adjustment.

Chrome knife sections may stay sharp longer but may be nicked by gravel or small stones.

If the sections are sharpened, be sure to maintain the original bevel and angles as shown.

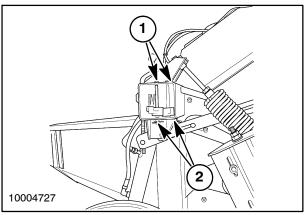
- 1. New sections
- 2. Correctly sharpened, proper angle and bevel
- 3. Incorrectly sharpened, wrong angle, narrow bevel
- 4. Incorrectly sharpened, ends off center



SPARE KNIFE STORAGE

Two spare knives can be stored in the frame tube. Install drilled pins, 1, through the frame holes and knife heads. Install hairpin cotters, 2, in the drilled pins.

NOTE: Spare knives do not come with the machine.



REMOVING AND REPLACING KNIFE **ASSEMBLIES**



WARNING A



When removing or installing a knife assembly, do not hold down the sections with fingers or any short object that could slip and result in loss of, or injury to, fingers.

Removal

To remove a knife assembly, remove knife head bolt, 1. A 13/16" socket fits the nut and a 3/4" wrench fits the bolt head. The nut and bolt are tapered to fit countersunk holes in the rocker arms, 2. Use an extension and socket through hole, 3, to loosen the connecting rod bolt, 4.

If the knife is hard to remove because guards or knives are bent, loosen the guard bolts.

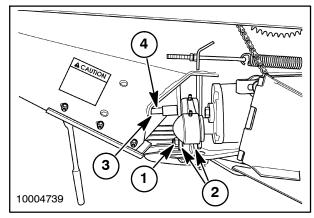
IMPORTANT: The rubber bushings in the knife head and connecting rod will last much longer if the knife is moved to the center of its stroke before tightening bolts, 1 and 4. The knife will be in center-stroke if a socket wrench installed through frame hole, 3, lines up with the connecting rod bolt, 4.

IMPORTANT: Straighten the knife assembly if it is bent.

Hold the knife head and sight along the knife back. The knife must be straight. Rotate the knife 1/4 turn and recheck for bends. To remove a bend, clamp the knife back in a vise. Another way to remove a bend is to lay the high spot on a tire or the frame. Press at each side of the bend until the knife is straight. Do not straighten the knife with a hammer as the knife back may be damaged.

Riveted Knives

Check the knife assemblies for loose rivets. To tighten a rivet; place the rivet over a solid support. Strike the rivet with a heavy hammer to swell the rivet. If several rivets are loose, it is usually easier to remove the knife assembly and then reseat the rivets.



Installation



🛕 Warning 🛕



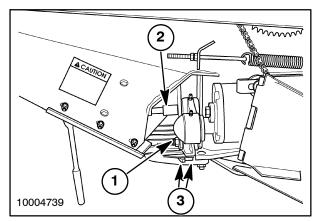
Be very careful when installing a knife assembly. Do not touch the sections if another person is installing the knife assembly. If the end of the knife hits, use a hammer handle or other tool to force the knife to line up with the opening in the quard.

Install the knife head bolt with head to the rear. Rotate the conditioner rolls by hand to move the knife to the center of its stroke. Then tighten knife head and connecting rod bolts, 1 and 2, to 115 N·m (85 ft. lbs.).

IMPORTANT: Check to be sure the knife back is centered, front to back, in the opening in the guards, 3. If the knife back is too far forward or back, or the outer section is too high or too low, refer to "Sickle Drive Adjustment" in this section of the manual.

IMPORTANT: Align the guards and adjust the knife clips.

Remove and replace the right knife in the same way.



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KNIFE HEAD

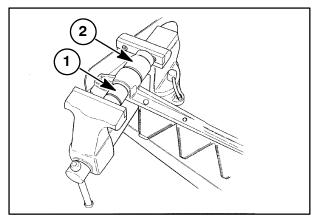
The knife head assembly attaches to the knife using the same rivets or bolts that attach the knife sections to the cutter bar. Refer to the "Replacing Knife Sections" section

KNIFE HEAD BUSHING

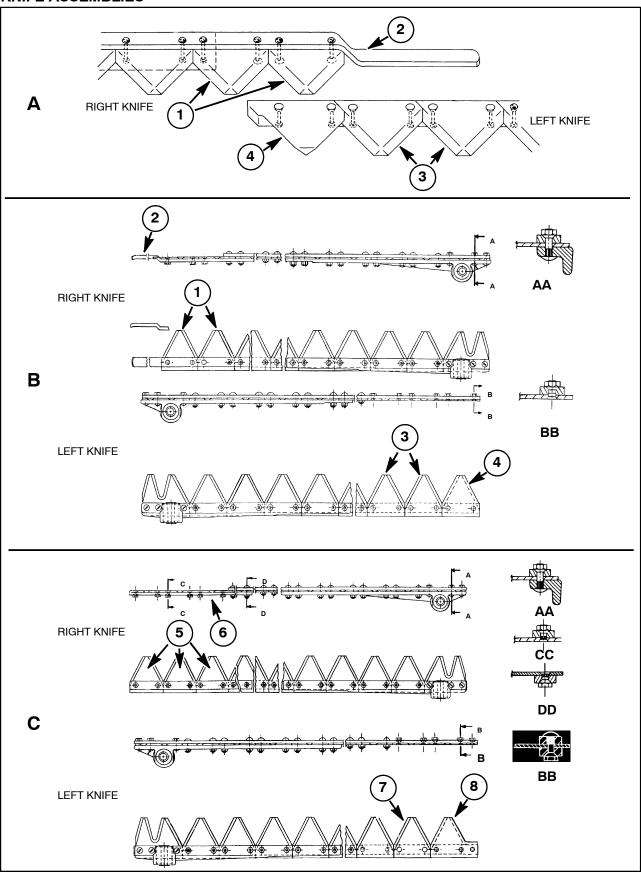
The knife head bushing has rubber bonded between steel bushings. Replace the bushing if the rubber is loose or charred from heat.

Use a vise or press to remove the knife head bushing as shown. Place a spacer, 1, with a 32 mm (1-1/4") outside diameter against the outer shell of the bushing. (A 15/16" socket is about the right size.) Center another spacer, 2, with an inside diameter of at least 32 mm (1-1/4") over the opposite side of the bushing. A 50 mm (2") long (1-1/4" pipe nipple is about the correct size.) Use the vise or press to push the bushing out of the knife head and into the larger spacer.

Use the same spacers to install the new bushing. Be sure to press against only the outer sleeve of the new bushing. Press the bushing into the knife head until the inner sleeve is centered from side to side.



KNIFE ASSEMBLIES



NOTE: The Model 499 uses two counterstroking knife assemblies that overlap at the center of the cutter bar. The overlap areas must be smooth. The overlap areas of the knives require special knife sections, installation hardware and a special center guard.

IMPORTANT: Left and right are determined by standing behind the machine and facing in the direction of travel. Left and right are reversed if you are standing in front of the machine and looking toward the cutter bar.

The model 499 is equipped with one of three (3) styles of knife assemblies shown. Determine the knife style on your machine before servicing the knife assembly. The three styles are:

- Riveted knife assemblies with a single overlap section.
- bolted knife assemblies with a single overlap section.
- bolted knife assemblies with two overlap sections.

NOTE: Machines above serial number 590275 are equipped with the bolted knifes(c) with two overlap sections. These knife assemblies can be used to replace bolted(b) knifes with a single overlap section by also replacing the special center guard. They can be used to replace riveted(a) knifes by replacing the special center guard and the hold down clips.

When replacing knife sections, refer to the drawing for the knife on your machine.

Riveted(A) or Bolted (B) Knives With a Single Overlap Section

The riveted and bolted knives use the same knife sections.

The **right** knife assemblies require two bottom countersunk sections, 1. A knife back extension, 2, is also installed on the right knife. The extension holds the last knife section and also rides on the end of the left knife.

The **left** knife assemblies require two top countersunk sections, 3, and one bottom countersunk section, 4. The bottom countersunk section on the left knife is the same section as used on the right knife, however it is installed with the bevel down.

The countersunk sections require flat head rivets or bolts. Install the nuts on bolts in the overlap area with the beveled side of the nut against the knife back.

Bolted Knives(C) With Two Overlap Sections

The **right** knife assembly requires three bottom countersunk sections, 5. A knife back extension, 6, is also installed on the right knife. The extension holds the last three knife sections.

The **left** knife assembly requires one top countersunk section, 7, and one special "Tomahawk" section, 8, that is installed with the bevel down.

KNIFE SECTIONS, REPLACEMENT

Riveted Knife Assemblies

To replace a section on a riveted knife assembly, 1, remove the rivets from the knife back. Support the knife back when driving the rivets out of the knife back. Special rivet removal and installation tools are available to replace a section with the knife installed in the machine. If the tool is not available, remove the knife assembly to replace the section.

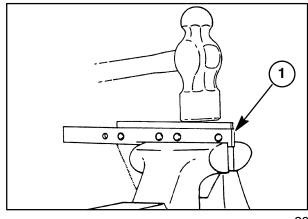
NOTE: To replace a section in the overlap or knife head areas, remove the knife assembly from the cutter bar.

Several different lengths round head knife section rivets are required. The knife head and knife back extension require longer rivets than those used for the knife back. Special flat head rivets are also required at the knife overlap area. Be sure to use the correct type and length rivets when replacing a knife section bolt.

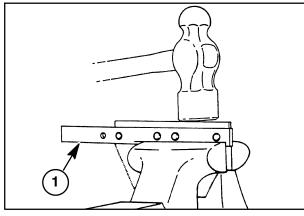
The LH riveted single section overlap knife uses thirty-one 21/32" long rivets, twelve 1" long rivets, and six 9/16" long flat head rivets.

The RH riveted single section overlap knife uses thirty 21/32" long rivets, six 15/16" long rivets, twelve 1" long rivets and three 1/2" long flat head rivets.

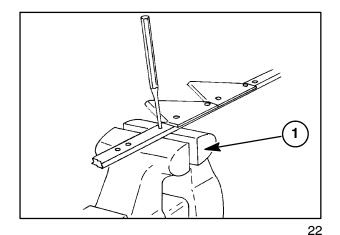
To remove a worn or damaged section, place the knife assembly in a large vise with the section between the jaws. Rest the knife back, 1, on a jaw. Do not tighten the vise against the section. Use a large hammer to strike the rear edge of the section to shear the rivets. Remove the knife assembly from the vise.



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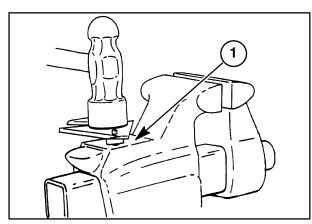


Open the vise jaws, 1, just enough for the rivet head to clear the jaws or support the knife back on a solid surface on each side of the rivet(s) to be removed. Use a punch to drive the rivets out of the knife back.



Install new rivets in the knife back. Place the rivet heads and the knife back on a solid surface, 1. Place the new section over the rivets. Use a heavy hammer to strike the rivet to expand it to fill the holes in the knife back and section. Peen the rivet so the top is rounded to prevent crop from being caught on the rivet.

NOTE: When replacing a section in the overlap area, be sure the flat head rivets are flush with or below the knife surface. Use a file to make the heads flush if required.



23

Bolted Knife Assemblies

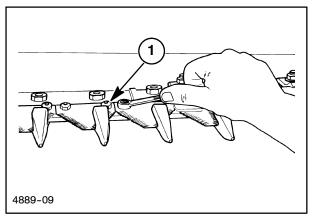
The knife sections are fastened to the knife back with two special bolts and lock nuts, 1. A knife section can be replaced without removing the complete knife assembly from the mower-conditioner. On machines with standard guards, it will be necessary to remove a hold-down clip to replace certain sections. On machines with stub guards, remove the hold-down clip to replace a section. Remove the special bolts that attach the knife head to replace a section under the head.

NOTE: When replacing a section in the overlap area, be sure the flat head bolts are flush with or below the knife surface. Use a file to make the heads flush if required.

To remove a knife section, remove the lock nuts from the special bolts and lift the section off the knife back.

Clean any crop build up off the knife back.

To install a new section, place the section over the bolts and install the lock nuts. Torque the lock nuts to a maximum of 8-11 N·m (70-100 inch pounds).



Knife Section Bolts

Several different length knife section bolts, 1, are used. The knife head and knife back extension require longer bolts than those used for the knife back. Special flat head bolts are also required at the knife overlap area. Be sure to use the correct type and length bolts when replacing a knife section bolt.

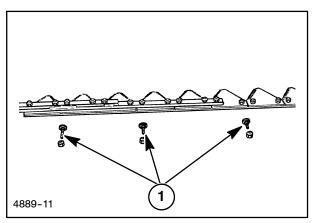
The LH bolted single section overlap knife uses thirty-one 5/8" long bolts, three 7/8" long bolts, nine 1" long bolts, six 1/2" long flat head bolts and forty-nine locknuts.

The RH bolted single section overlap knife uses thirty 5/8" long bolts, nine 7/8" long bolts, nine 1" long bolts, three 1/2" long flat head bolts and fifty-one locknuts.

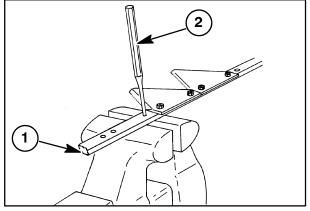
The Left two section overlap knife uses thirty-five 5/8" long bolts, three 7/8" long bolts, nine 1" long bolts, five 1/2" long flat head bolts and fifty-two locknuts.

The Right two section overlap knife uses twentyeight 5/8" long bolts, five 3/4" long bolts, three 7/8" long bolts, nine 1" long bolts, six 1/2" long flat head bolts and fifty-one locknuts.

To remove a bolt; support the knife back, 1, and use a punch, 2, and hammer to drive the bolt out of the knife back.



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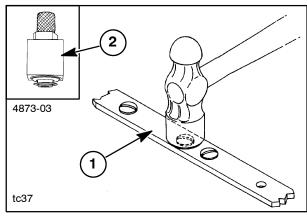


26

When installing a new bolt, seat the bolt before installing the nut. Align the serration's on the base of the new bolt with the grooves in the knife back, 1, formed by the original bolt. Use a hammer to seat the bolt.

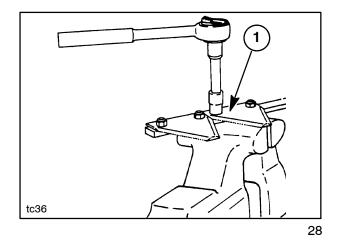
A special tool, 2, part #KX711426DS, is available to seat the bolts while the knife assembly is still in the mower-conditioner.

NOTE: Do not attempt to seat a new bolt using the lock nut as the threads may strip before the bolt is seated.



Place the knife section, 1, over the bolts and install a lock nut on each bolt.

Torque the lock nuts to a maximum of 8-11 N·m (70-100 inch pounds).



GUARD MAINTENANCE AND ADJUSTMENT



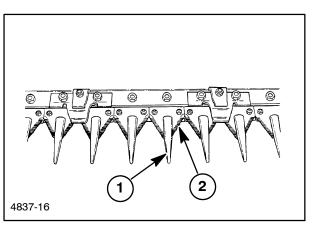
⚠ WARNING **⚠**



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

The main purpose of the guards, 1, is to protect the knife, 2. However, they also have several other functions. They help lift and separate the crop. They have a ledger surface that together with the knife section acts as a shear to cut the crop. They help guide the knife back and also help keep trash from building up on the knife back.

Replace worn or dull guards promptly. A guard should be replaced when the corners of the ledger surface become rounded or dull.



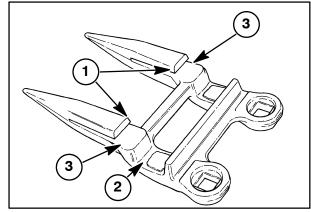
29

SPECIAL GUARDS

End Guards

The Model 499 uses several special guards. The guards at each end of the cutter bar have the top lip, 1, shortened to clear the knife drive rocker arms. The channel, 2, for the knife back is deeper to clear the nuts on the knife head bolts. The outer part of the trash bar at 3 is removed to prevent running down crop. The bar is removed from both sides of the guard so that the same part can be used in either the left or right end of the cutter bar.

NOTE: Do not use a regular guard in place of the special end guards. The knife drive arms may be damaged.



Center Guards

A modified center guard allows the knives to overlap.

Standard style guards, 1, used on machines with a single overlap section have a larger opening, 2, between the top lip and the ledger surface on the left guard point. The left part of the knife support rib is also machined lower.

Standard style guards, 3, used on machines with two overlapping sections have a larger opening, 4, between the top lip and the ledger surface on both guard points.

Stub style guards used on machines with a single overlap section have the ledger surface on the left guard point and the left part of the knife support rib machined lower.

The center stub style guard used on machines with two overlapping sections is a regular stub guard that is installed with a shim between the guard and cutter bar.

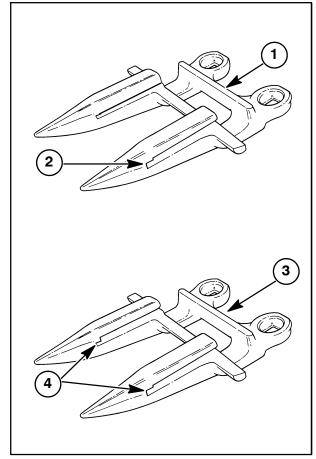
NOTE: Do not use a regular guard in place of the special center guards. The knives will not pass through the guard. Severe damage to the knife or drive may result.

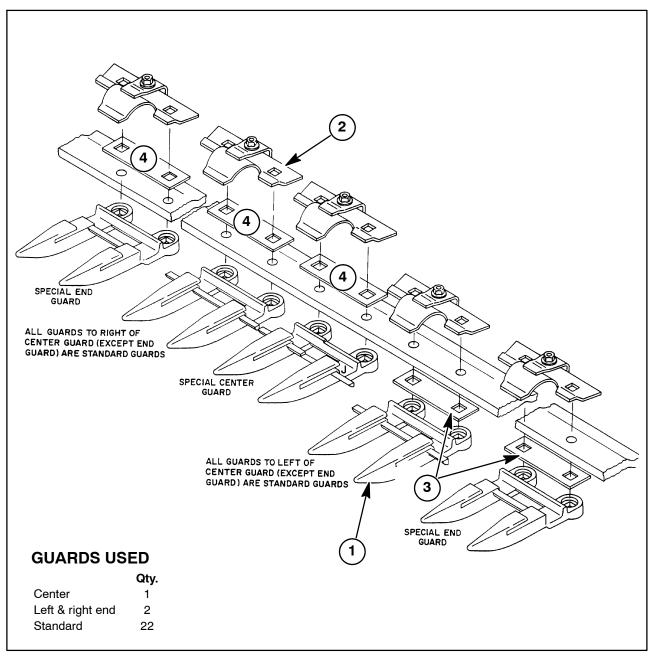


WARNING 🗚



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Guard Installation

Shim the guards, 1, and hold down clips, 2, to allow the knives to overlap properly. The left knife should be 3 mm (0.120") lower than the right knife.

Install a 3 mm (0.120") shim, 3, between the guard and cutter bar at all guards (standard or stub guards) to the left of the center guard. DO NOT place a shim between the center guard and cutter bar. DO NOT place shims between the cutter bar and the guards to the right of the center.

When the machine is equipped with standard guards install a 3 mm (0.120") shim, 4, under the center hold-down clip and all hold-down clips to the right of the center clip.

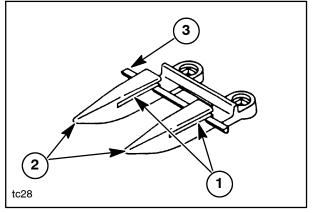
When the machine is equipped with stub guards, the center hold-down clip and all hold-down clips to the right of the center clip will require an additional 3 mm (0.120") shim compared to the left clips.

Guard Inspection

Inspect the edge of the guard ledger surface at 1. If the edge is rounded or severely damaged, the guard should be replaced.

The tips, 2, of the standard guards should be relatively sharp. If they are blunted from contact with foreign objects, material can hairpin and plug the cutter bar. A hand grinder can be used to restore the original point.

If the trash bars, 3, on the guards are bent, they should be straightened so they are parallel to the knife back.





A WARNING A



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Standard Guard alignment

The ledger surfaces of the guards, 1, for each knife should be aligned so they all hold the knife at the same height. The knife sections should lay almost flat on the ledger surface of the guards. The tip of the knife should contact the front of the ledger surface.

If the guards are not aligned, there will be excessive wear on the knife sections and guards.

The bottom of Figure 34 shows the guard and knife properly adjusted.

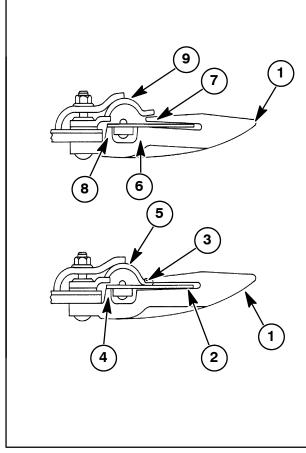
- The tip of the knife section contacts the front of the ledger surface at 2.
- The lip, 3, of the guard does not contact the knife section.
- The back rib, 4, on the guard holds the knife back
- The hold down, 5, is close to the knife section, but does not cause it to bind.

The top of Figure 34 shows the guard and knife improperly adjusted.

- The knife section contacts the rear of the ledger surface at 6.
- The lip, 7, of the guard contacts the knife section.
- The back rib, 8, on the guard is worn and holds the knife back too low.
- The hold down, 9, is too far away from the knife section.

NOTE: The tip of the guard in the top of Figure 34 should be bent upward to allow the knife to rest on the ledger surface as shown in the bottom of Figure 34.

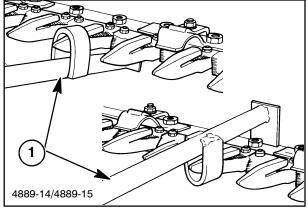
Check the guard alignment by sighting along the ledger surfaces. An estimate of the guard alignment can be obtained by sighting along the tips of the guards, however the important surface to align is the ledger surface.



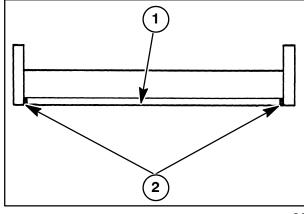
Usually when the guard's alignment needs to be adjusted it is because the cutter bar and not the guards are bent. A homemade guard straightening tool, 1, or heavy hammer can be used to align the guards.

Use a new knife or straight knife with little wear as a gauge to check and adjust the alignment. Start at the outside of the cutter bar. Insert the knife assembly in the guards and check the alignment as the knife is being installed. Bend any high guards down as the knife is being installed. Bend any low guards up after the knife is installed. If a hammer is used to bend the guards, be sure to hit the solid surface in front of the knife section to avoid breaking the lip.

In case of severe damage to the cutter bar, remove all guards. Stretch a string, 1, across the width of the cutter bar to use as a guide in straightening the cutter bar. Support the string on the same six spacer, 2, at each end of the cutter bar. The cutter bar should be straight for the full width. A small, gradual, bow, less than 3 mm (1/8"), down in the center is acceptable. The cutter bar can resemble a smile, not a frown.



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Stub guard alignment

The stub guards, 1, should be aligned the same as the standard guards. The knife section should lay flat on the ledger surface.

The bottom of Figure 37 shows the guard and knife properly adjusted.

- The tip of the knife section contacts the front of the ledger surface at 2.
- The back rib, 3, on the guard holds the knife back
- The hold down, 4, is close to the knife section, but does not cause it to bind.

The top of Figure 37 shows the guard and knife improperly adjusted.

- The knife section contacts the rear of the ledger surface at 5.
- The back rib, 6, on the guard is worn and holds the knife back too low.
- The hold down, 7, is too far away from the knife section.

NOTE: The tip of the guard in the top of Figure 37 should be bent upward to allow the knife to rest on the ledger surface as shown in the bottom of Figure 37. Shims, 8, between the hold down and cutter bar adjust the clearance between the hold down and knife section.

Check the guard alignment by sighting along the ledger surfaces. An estimate of the guard alignment can be obtained by sighting along the tips of the quards, however the important surface to align is the ledger surface.

THE PERSON NAMED IN COLUMN TWO 0 to 0.38 mm (0" to 015")

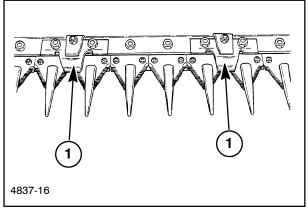
37

HOLD DOWN CLIPS

The hold down clips, 1, keep the crop from forcing the knife section away from the ledger surface. Keep the clips adjusted close to the knife section but not so close that the knife cannot move freely. The hold down clips are spaced across the cutter bar. There is not a clip at every guard as the top lip on the guard helps to hold the knife from lifting too far.

NOTE: The Model 499 with standard guards may have either one piece hold down clips or two piece, adjustable hold down clips as shown. The adjustable clips can be installed on the machines with one piece clips by ordering a conversion kit.

IMPORTANT: Check and adjust the guard alignment before checking the hold down clip adjustment.



Adjustable Hold Downs for Standard Guards

The adjustable hold down clips, 1, are spaced across the cutter bar. There is not a clip at every guard as the top lip on the guard helps to hold the knife from lifting too far.

The lip at the rear edge of the clip holds the rear of the knife section in place. At the center and all clips to the right of center, a 3 mm (0.120") shim, 2, is installed under the clip. All clips should have a clearance of 0.13 mm (0.005") to 0.6 mm (0.025") between with the knife section and clip at "X". In some cases a 0.25 mm (0.010") shim, 3, is required to obtain the proper clearance. If the clearance is less than 0.13 mm (0.005"), the knife may not move freely.

The front of the clip should be adjusted by tightening flanged nut, 4, to obtain a clearance of less than 0.020" between the clip and knife section at "Y". To compensate for the initial "break-in" wear, check the clearance and adjust, if required, after the first 50 acres of operation.

If replacing a clip, be sure to place the $3/8" \times 1-1/4"$ plow bolt, 5, for the adjustable clip through the clip before installing the clip.

NOTE: Be sure a 3 mm (0.120") shim, 6, is installed between the center guard and cutter bar and also between all the guards to the left of center and the cutter bar.

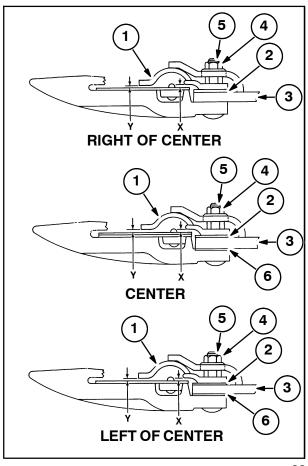
IMPORTANT: Check and adjust the guard alignment before checking the hold down clip adjustment.

One Piece Hold Down Clips for Standard Guards

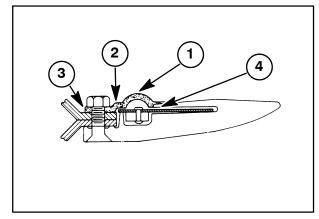
The one piece hold-down clips, 1, are spaced across the cutter bar. There is not a clip at every guard as the top lip on the guard helps to hold the knife from lifting too far.

NOTE: Be sure a 3 mm (0.120") shim is installed between the center guard and cutter bar and also between all the guards to the left of center and the cutter bar.

The lip, 2, at the rear edge of the clip holds the rear of the section in place. At the center and all clips to the right of center, a 3 mm (0.120") shim is installed between the clip and cutter bar at 3. All clips should have a clearance of 0.13 mm (0.005") to 0.6 mm (0.025") between with the knife section and lip. In some cases a 0.25 mm (0.010") shim is required to obtain the proper clearance. If the clearance is less than 0.13 mm (0.005"), the knife may not move freely.



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The front of the clip should be adjusted by bending it up or down to obtain a clearance of less than 0.50 mm (0.020") between the front of the clip and the knife section at 4, Figure 40.

The knife assembly must move freely after the clips are adjusted.



WARNING A



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Hold Down Clips for Stub Guards

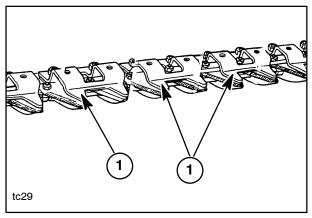
The stub guards require a hold down clip, 1, at each guard. There is no lip on the guards to assist the hold down clips in keeping the knife close to the guard ledger surface.

NOTE: Be sure a 3 mm (0.120") shim is installed between the center guard and cutter bar and also between all the guards to the left of center and the cutter bar.

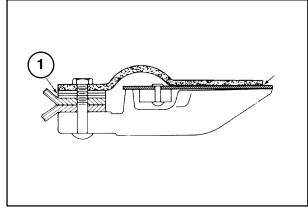
IMPORTANT: Check and adjust the guard alignment before checking the hold down clip adjustment.

The clip should hold the knife in position without binding. Adjust the clearance between the clip and guard by using shims, 1, under each clip. The clearance between the clip and knife section should be 0.12-0.38 mm (0.005" - 0.015") at 2. Add or remove shims as required to adjust the clearance. 0.25 mm (0.010"), 0.9 mm (0.036"), 2.2 mm (0.090") and 3.1 mm (0.0120") shims are available.

NOTE: The center hold-down clip and all hold-down clips to the right of the center clip will require an additional 3 mm (0.120") shim compared to the left clips.



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SICKLE DRIVE ADJUSTMENT

🕰 Warning 🕰



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

Knife sections should be 0.08 mm-0.8 mm (0.003"-0.030") above the ledger surface of the guards.

- 1. Upper rocker arm bolt
- 2. Rocker arm (2)
- 3. Hardened washer. 0.135" thick x 33/64" ID x 1" OD (4)
- 4. Hardened washer, 0.105" thick x 13/22" ID x 1" OD (2)

To adjust knife head-to-guard clearance:

- 1. Turn the conditioner rolls so the knife is at the center of its stroke.
- 2. Loosen bolt, 1, at the top of the rocker arms, 2.
- 3. Move the rocker arms up or down until knife-to-guard clearance is correct.
- 4. Tighten bolt, 1.

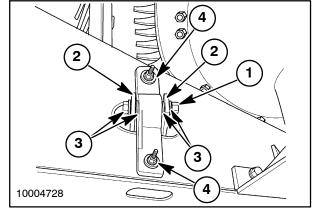
The knife back bar should be centered in the opening in the guard. If the back bar rubs the guard, the knife head bushing will be overloaded and may fail.

If the front or back edge of the knife back bar rubs the guards:

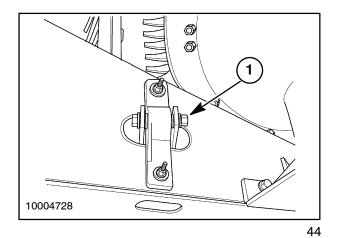
- 1. Loosen the two guard bolts. Hold the guard against the front of the cutter bar while tightening the guard bolts.
- 2. Remove the knife assembly. Straighten the knife head and back bar.
- 3. If the knife head bushing is not centered (front to back) in the knife head, use a large vise and 15/16" socket to move the bushing.

NOTE: Do not press against the inner sleeve of the bushing.

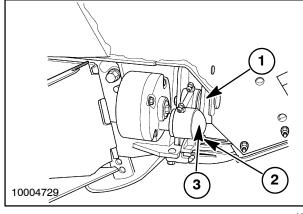
If the knife back bar still rubs the guards, rearrange the shim washers on the sickle drive crank pin, so the knife back is centered in the guards by:



1. Loosen upper rocker arm bolt, 1.



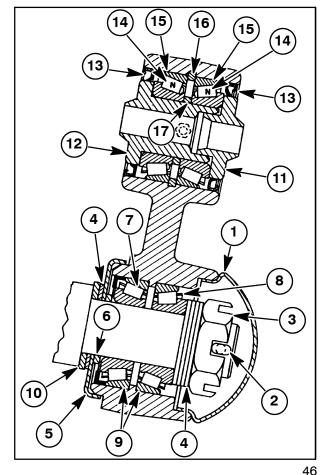
2. Remove connecting rod bolt, 1, knife head bolt, 2, and hub cap, 3.



- 3. Remove cotter pin, 2, slotted nut, 3, and front shim washers, 4.
- 4. Remove the connecting rod and front bearing cone, 8. Use care to keep dirt out of the bearings.
- 5. Remove: Rear bearing cone with seal, 7; Washer, 6; Dust shield, 5.

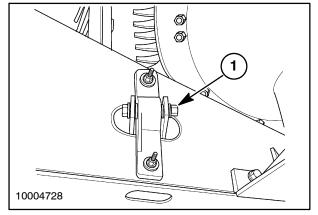
NOTE: Bevel side of washer, 10, goes towards the gearbox.

- 6. Move the knife back forward or backward in the guard opening by moving shim washers, 4, between the front and back of the connecting rod. The total number of washers should not change.
- 7. Replace: Dust shield, 5; Washer, 6; Cone and seal, 7. The cone may be slightly loose on the pin.
- 8. Install: Connecting rod. Be sure the seal lip and dust shield are not damaged; Front bearing cone, 8; Remaining washers, 4; Slotted nut, 3.
- 9. Tighten slotted nut, 3, to 47 N·m (35 ft. lbs.). Back off the nut until it is loose, then retighten it until snug. Rotate the nut to the closest of the two crank pin holes and install the cotter pin, 2. Be sure to bend the cotter pin against the shaft to clear hub cap, 1.
- 10. Replace hub cap, 1.
- 11. Replace connecting rod bolt, 2, and knife head bolt, 3.



IMPORTANT: Rotate the conditioner rolls so the knives are at mid-stroke before tightening the two bolts. Tighten these two bolts and upper rocker arm bolt, 1, to 115 N·m (85 ft. lbs.).

Turn the rolls so the knives make a full stroke. Check to be sure the sickle drives and knives move freely. Correct any interference between the parts. Grease the connecting rod.



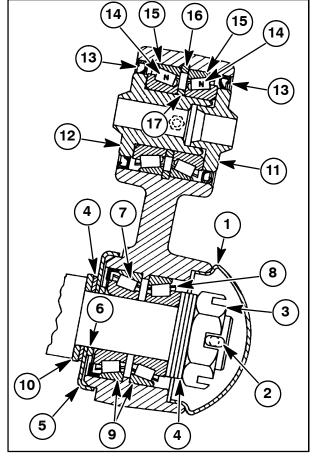
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SICKLE DRIVE CONNECTING ROD

- 1. Hub cap
- 2. Cotter pin
- 3. Slotted nut (special thread)
- 4. 1-1/64" ID x 1-9/16" OD x 0.060" thick hardened shim washers (as required)
- 5. Dust shield
- **6.** Washer (1-1/32" ID x 1-5/16" OD x 1/8" thick)
- 7. Bearing cone and seal
- 8. Bearing cone
- 9. Bearing cup (2)
- 10. Washer (bevel towards gearbox)
- 11. Front spacer
- 12. Rear spacer
- 13. Seal (2)
- 14. Bearing cone (2)
- 15. Bearing cup (2)
- 16. Cup spacer
- 17. Cone spacer

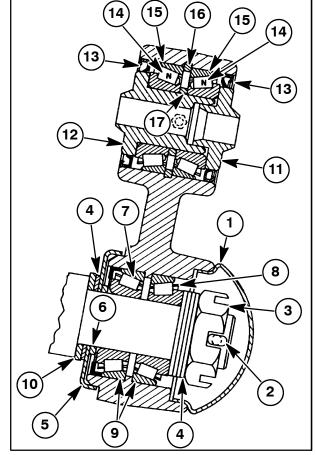
Bearings, 14 and 15, and spacers, 16 and 17, are only available as a matched set. The width of the spacers controls bearing adjustment. Replace these parts as a complete assembly.

NOTE: Remove and replace the connecting rod as outlined in "Sickle Drive Adjustment."



Disassembly

- 1. Remove crank pin bearing cups, 9, with a hammer and punch.
- Remove the grease fitting from the rocker arm end of the connecting rod. Place the connecting rod in a vise with front spacer, 11, up. Use a punch through the bolt hole to drive out the rear spacer, 12.
- 3. Remove seal, 13, cone, 14, and cone spacer, 17.
- 4. Remove front spacer, 11, seal, 13, and cone, 14.
- 5. Drive out bearing cups, 15.
- 6. Use a small punch in the grease fitting hole to collapse cup spacer, 16, so it can be removed.

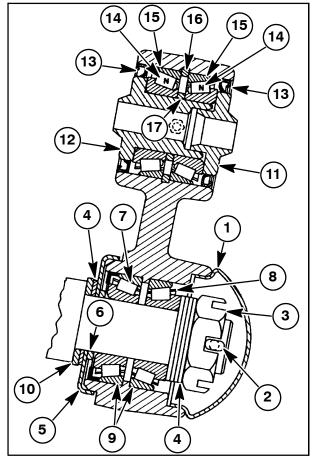


Assembly

 Clean the connecting rod. Pack bearing cones with multipurpose grease as they are assembled. Use a mild steel rod, not a punch, to install the bearings.

NOTE: The rocker arm bearing must be installed as a complete assembly because the cup spacer and cone spacer control the bearing adjustment.

- 2. Install cup spacer, 16 with the gap in line with the grease fitting hole.
- 3. Install two bearing cups, 15.
- 4. Press one bearing cone, 14, on rear (long) spacer, 12. Install these parts in the connecting rod.
- 5. Install cone spacer, 17, and second cone, 14, on the long spacer. Be sure the parts are seated. Install front spacer, 11, in rear spacer, 12.
- 6. Install grease seals, 13, with seal lips out. Dirt will be flushed out as the fitting is greased.
- 7. Install two bearing cups, 9.
- 8. Reinstall the connecting rod as outlined in "Sickle Drive Adjustment."





A WARNING A



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

KNIFE TIMING (COUNTERSTROKE)

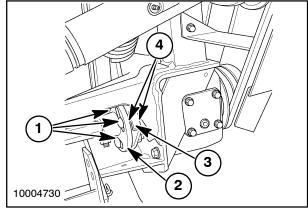
IMPORTANT: Both knife assemblies must reach the inner end of their strokes at the same time or there will be long stubble at the center of the swath or under the windrow. If the knives are out of time, severe vibration may damage the header or reel.

To time the knives:

- 1. Rotate the conditioner rolls by hand until the right knife assembly is at the inner end of its stroke.
- 2. Loosen three bolts, 1.
- 3. Without moving the right knife, rotate the hex shaft and hub, 2, in relation to hub, 3, until the left knife is at the inner end of its stroke. Tighten the bolts securely. Hardened washer, 4, must be in place.

NOTE: While tightening bolts, 1, hold the two shafts parallel.

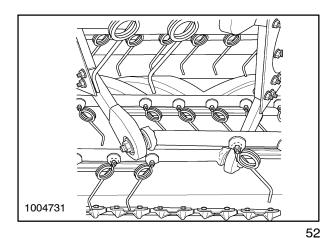
NOTE: A similar coupler at the left sickle drive gearbox provides additional adjustment.



REEL MAINTENANCE

TINES

Tine bars from the left and right side of the header are shown overlapping at the center of the header. Left and right tines and clips will not interchange. The mounting eye of the tine, the tine clip, and the lock nut must be on the FRONT side of the tine bar. Reel bats are on the back side of the tine bars. Replace the lock nuts if they can be turned on with your fingers. Align the tines by pulling them in the direction of the short dotted arrows while tightening the tine bolts.



WARNING A



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TINE BARS

IMPORTANT: Running the header with bent tine bars can cause premature failure of the tine bar bearings. Place a wood block at the bend and use a heavy sledge to straighten the tine bar. It is usually not necessary to remove the tine bars to straighten them.

To remove a tine bar:

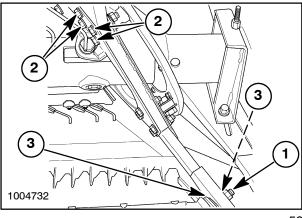
Use a 3/8" allen wrench and 1-1/8" box-end wrench to loosen nuts. 1 at each end of the tine bar. At the center of the header, remove four bolts. 2, in the spider arm. Pull the spider arm out in the direction of the long dotted arrow. Remove the nuts on the spider bearing bolts. Take the tine bar out of the reel.

Refer to the section "Tine Bar Bearings" which follows for information on removing and replacing bearings in the tine bar.

To install a tine bar:

NOTE: At each tine bar bearing stud, use a special washer, 3, on each side of the spider arm.

Install the bearing studs in the spider arm, but leave the nuts loose. Install the inner arm in the spider. Install four bolts, 2, with heavy flat washers on each side of the spider. Tighten the nuts. 1, on the bearing studs with the allen wrench and box-end wrench.



TINE BAR BEARINGS

Tine bars are removed from the spider legs as detailed in the "Tine Bars" portion of this section.

- 1. Carefully remove the dust cap from the bearing housing. Remove the snap ring. Remove the bearing from the bearing housing by placing the nut on the threaded end of the bearing stud and tapping against the nut. In some cases it may be necessary to place spacers against the shoulder of the bearing housing and pull the bearing out of the housing by tightening the nut against the spacer.
- 2. Clean all parts thoroughly. Dirt or grit will cause excessive bearing wear.
- 3. Pack the tine bearing level full of multipurpose grease or a good grade of wheel bearing grease.
- 4. Tap the bearing into position. Be sure it is seated against the shoulder of the housing. Install the snap ring.
- 5. Fill the cavity on the outer side of the bearing slightly more than level full of wheel bearing grease or a good grade of heavy water pump grease.

When the dust cap is installed, the grease should fill the area under the cap to provide a seal against dust or dirt. However, too much grease will force the dust cap out of position. The dust cap should fit snugly on the shoulder of the bearing and be 0 mm -1 mm (0"-1/32") past the shoulder of the bearing.

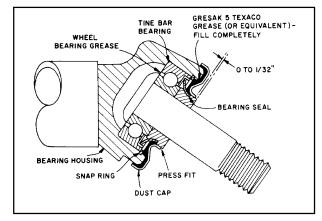
6. Replace the tine bars. Be sure to use special washers on each side of the spider as detailed in the "Tine Bars" portion of this section.

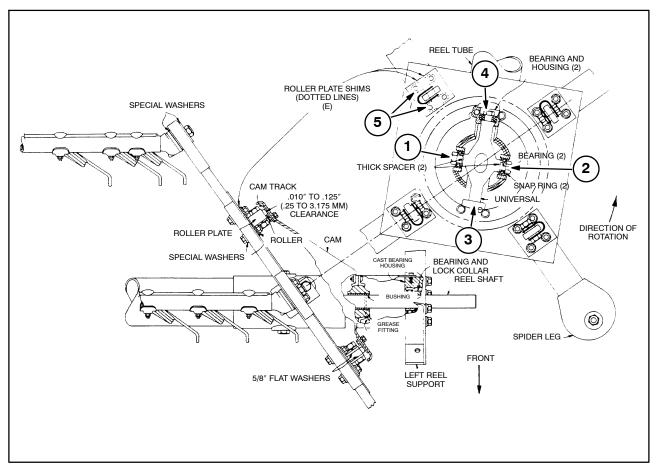


WARNING A



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REEL CAM AND ROLLERS

The left cam and rollers are shown. The right end of the reel is similar. 5/8" flat washers are used at each side of each roller. Slotted shims between the roller plate and spider are used to get 0.25 mm - 3.175 mm (0.010"- 0.125") at the closest point between the roller and cam tracks when the reel is turned one complete revolution.

NOTE: Be sure to use the same number of shims at both leading and trailing edges of the four roller plates (8 locations) for each cam. Shims are shown by dotted lines at 5.



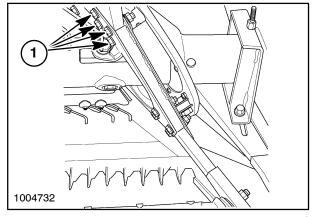
WARNING **A**



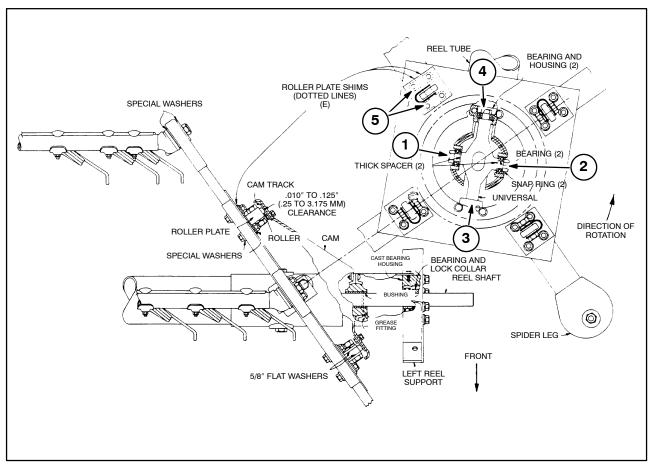
Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

Be sure special washers are installed on roller plate bolts at 1.

NOTE: If the clearance is excessive, more than 3.175 mm (0.125"), at all four cam track rollers, the cam track may have moved out from the reel. Move the cam track in before reshimming the roller plates.



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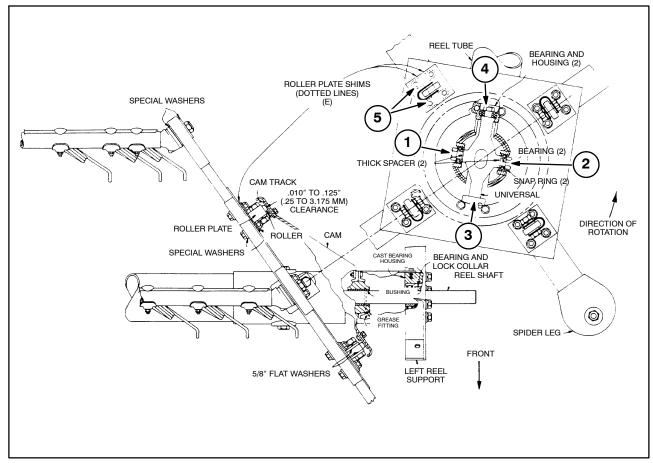
57

To move the cam track in:

- Loosen the set screw in the lock collar inside the reel support.
- 2. Loosen the lock collar with a punch and hammer. The lock collar must be turned opposite the direction the reel rotates.
- 3. Move the support and cam track in on the reel shaft and header to reduce roller clearance.
- 4. Tighten the bearing lock collar by turning it in the direction the reel rotates. The collar must be tight.
- 5. Tighten the lock collar set screw.
- 6. Tighten the two bolts holding the reel support to the header.
- 7. Loosen the two bolts which hold the reel supports to the top of the header.

REEL U-JOINTS

Each spider is attached to the reel tube with a universal joint.





🛕 Warning 🛕



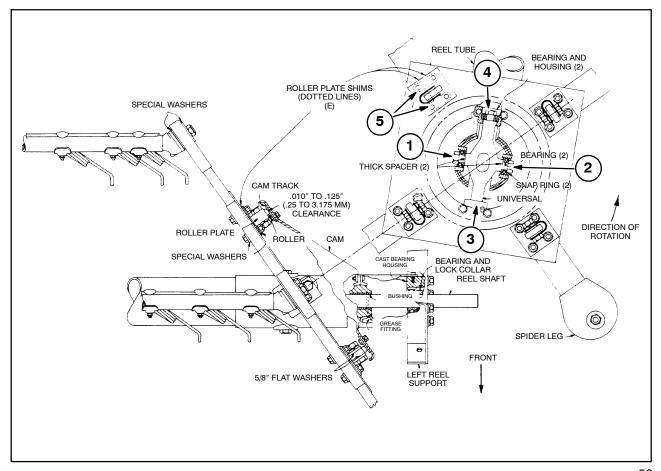
Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

Removing a U-joint:

- 1. Remove the snap ring at bearing, 2.
- 2. Loosen bolts, 1, 2, 3, and 4, THREE TURNS.
- 3. Using a hammer and large punch, hit bolts, 1 and 2, until the bolt heads are against the bearings. The bearings at 1 and 2 will be partway out of the tube.

- 4. Turn the reel so the slot in the tube is on top. Bearing, 4 or 3, will be up. Place a wood block between the spider and reel tube, or support the spider with a chain.
- 5. Remove bolts, 1 and 2. Be sure to keep the thick spacers.
- 6. Remove the two bolts in the bearing housing, 4 or 3, at the top of the reel tube. Remove the cap screw and bearing housing.
- 7. Remove the bolts holding bottom housing, 3 or 4. Slide the universal down through the slot in the tube.

NOTE: U-joint bearings are sealed on both sides, but the seal is even with one side of the bearing and recessed on the other side. The recessed seal must go toward the outside when the bearings are replaced.



Installing a U-joint:

- Install bearing and housing, 3, on one end of the universal. Use the cap screw to pull the bearing into place.
- Slide the universal up through the tube, and install two bolts in housing, 3, with special washers.
- 3. Install bearing housing, 4, with two bolts and special washers, and install the large cap screw.
- 4. To install bearings, 1 or 2, place the bearing and thick spacer on the cap screw and start the cap screw into the universal. Seat bearing, 2, in the housing and install the snap ring. Tighten the cap screws and hit bolts, 1 and 2, to seat the bearings.
- 5. Be sure all hardware is tight and turn the reel through one revolution to check for binding. Tighten bolts, 1, 2, 3, and 4, to 203 N⋅m (150 ft. lbs.).

REEL SUPPORT BEARINGS AND CAMS

When servicing the left reel support bearings, remove the reel belt shield and sheave.

Loosen bolts between the opposite reel support and the end of the header Figure 58. Remove the reel support from the cast bearing housing. Loosen the bearing locking collar and smooth the shaft. Remove the four bolts holding the cast bearing housing to the cam tube. The bearing and housing can be removed, leaving the cam in place.



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

CONDITIONER ROLLS AND GAP



WARNING 🛕

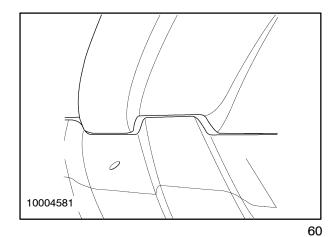


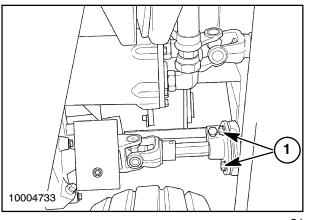
Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

Rubber lugs on the lower conditioner roll must be timed to mesh correctly with lugs on the upper roll. The lug of lower roll must be centered between lugs of the upper roll. Spaces at each side of the lug must be equal.

If the roll timing is not correct, the machine will vibrate and require more power. The machine may be damaged and the crop may be overconditioned.

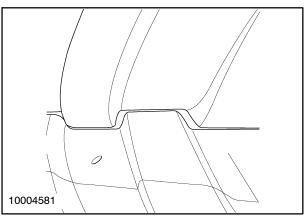
To adjust roll timing: Loosen three bolts, 1.





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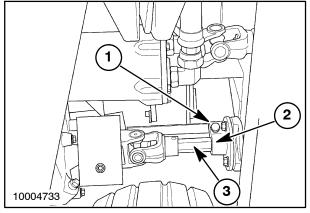
Rotate the lower roll until it is timed correctly.



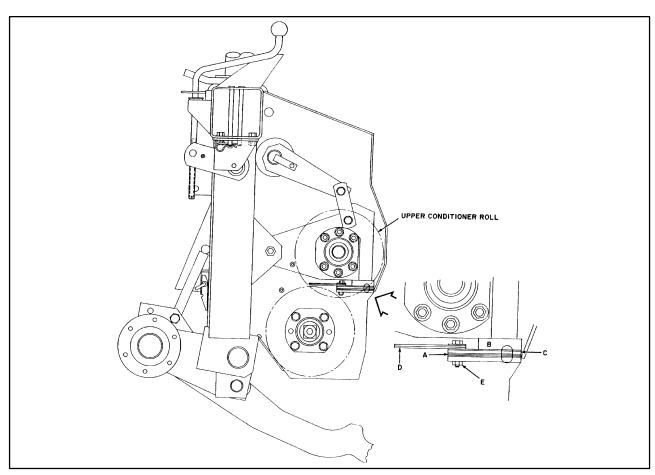
If the bolt slots are not long enough, remove bolt, 1. Move hub, 2, to the next flat on the hex shaft, 3. Retighten clamp bolt, 1. Readjust roll timing.

When timing is correct, tighten all hardware securely.

IMPORTANT: Check roll timing at each end of the rolls. If the rolls are timed correctly at one side, but not at the other, rotate the rolls and recheck the roll timing. If one end is still not timed correctly, move the top roll endways at the roll bearings and readjust roll timing.



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To adjust roll gap add or remove shims at the roll ends as shown. Adjust to a minimum of 0.38mm (0.015").

NOTE: The rolls must not touch each other or damage will occur.

HYDRAULIC AND HYDROSTATIC SYSTEMS



M WARNING **A**



Fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Always protect the skin and eyes from escaping fluid under pressure.

Before disconnecting lines or fittings, be sure to relieve all pressure. Before applying pressure to the system, be sure that all connections are tight and that lines, pipes, and hoses are not damaged. If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately.



WARNING A

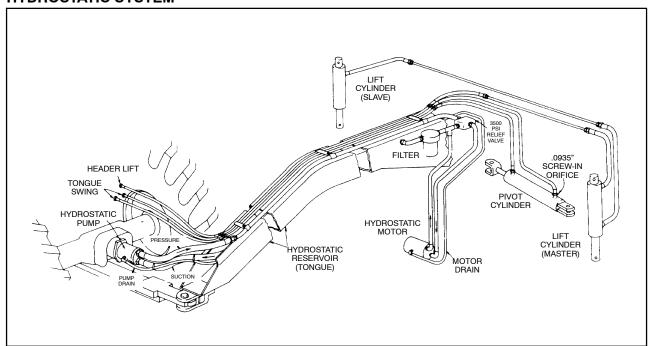


Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

HYDRAULIC SYSTEM

The tractor hydraulic pump and reservoir supply oil to raise the header and to pivot the tongue. Lower the header before checking the oil level in the tractor hydraulic reservoir. Use an oil approved by the tractor manufacturer, to keep the reservoir filled to the proper level. It has 75.7L (20 gal.) capacity.

HYDROSTATIC SYSTEM



WARNING



Because of the high pressures in these systems, use only genuine New Holland parts and hoses for repairing these systems.



⚠ WARNING **△**



The relief valve in the hydrostatic system is not adjustable and should not be tampered with. Check with your New Holland dealer's service department if you have problems with the hydraulic or hydrostatic systems.

The hydrostatic system is completely separated from the hydraulic system. The hydrostatic system drives

the cutter bar, reel, auger, and conditioner rolls. The square section of the mower-conditioner tongue is used for a reservoir.

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The hydrostatic system must be kept free of dirt, dust, water, rust, etc., or the hydrostatic pump or motor may be severely damaged. If the system is contaminated, the entire system must be drained and flushed with solvent.

IMPORTANT: Do not use the hydrostatic pump to force solvent through the system. The pump and motor will be damaged by lack of lubrication.

NOTE: Tongue oil temperature will be 50 degrees - 55 degrees above ambient temperature while running.

STORING

To prepare the mower-conditioner for storage:

- 1. Lubricate the mower-conditioner completely and run it slowly for a few minutes.
- 2. Loosen all drive belts.
- 3. Remove both knives from the cutter bar. Cover the knife with a good rust preventive and store it in a safe place.
- Disassemble and repack the right and left wheel bearings with a good grade of wheel bearing grease. Do not pack the wheel hub cavity more than one-third full.

To adjust the wheel bearings, jack up the wheel and remove the hub cap and cotter pin. Tighten the adjusting nut until the wheel drags. Loosen the nut one castellation or until the wheel turns

- freely. Install a new cotter pin and replace the hub cap.
- 5. Coat the exposed portion of the swing cylinder rod with grease.
- 6. Inspect for worn or broken parts. Replace with genuine New Holland service parts.
- Clean the mower-conditioner and repaint the bare or rusted parts with New Holland touch-up enamel. Your New Holland dealer has cans of red or yellow paint.
- 8. Engage the transport stops and retract the lift cylinders to allow the stops to support the frame.
- Store the machine where it is not exposed to the weather.

MINIMUM HARDWARE TIGHTENING TORQUES

IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

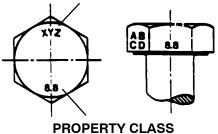
METRIC NON-FLANGED HARDWARE AND LOCKNUTS

NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	CL.8 W/CL8.8 BOLT
M4	1.7 (15)*	2.2 (19)*	2.6 (23)*	3.4 (30)*	3.7 (33)*	4.8 (42)*	2.3 (20)*
M6	5.8 (51)*	7.6 (67)*	8.9 (79)*	12 (102)*	13 (115)*	17 (150)*	7.8 (69)*
M8	14 (124)*	18 (159)*	22 (195)*	28 (248)*	31 (274)*	40 (354)*	19 (169)*
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	38 (28)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	66 (49)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	164 (121)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	330 (243)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	572 (422)

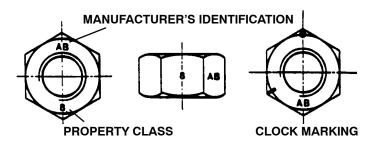
NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION HEX CAP SCREW AND CARRIAGE BOLTS CLASSES 5.6 AND UP





HEX NUTS AND LOCKNUTS CLASSES 05 AND UP



86529681 REV F 5.1

MINIMUM HARDWARE TIGHTENING TORQUES

IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

INCH NON-FLANGED HARDWARE AND LOCKNUTS

	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS			
NOMINAL SIZE	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	GR.B w/GR5 BOLT	GR.C w/GR8 BOLT	NOMINAL SIZE	
1/4	6.2 (55)*	8.1 (72)*	9.7 (86)*	13 (112)*	14 (121)*	18 (157)*	8.5 (75)*	12.2 (109)*	1/4	
5/16	13 (115)*	17 (149)*	20 (178)*	26 (229)*	28 (250)*	37 (324)*	17.5 (155)*	25 (220)*	5/16	
3/8	23 (17)	30 (22)	35 (26)	46 (34)	50 (37)	65 (48)	31 (23)	44 (33)	3/8	
7/16	37 (27)	47 (35)	57 (42)	73 (54)	80 (59)	104 (77)	50 (37)	71 (53)	7/16	
1/2	57 (42)	73 (54)	87 (64)	113 (83)	123 (91)	159 (117)	76 (56)	108 (80)	1/2	
9/16	81 (60)	104 (77)	125 (92)	163 (120)	176 (130)	229 (169)	111 (82)	156 (115)	9/16	
5/8	112 (83)	145 (107)	174 (128)	224 (165)	244 (180)	316 (233)	153 (113)	215 (159)	5/8	
3/4	198 (146)	256 (189)	306 (226)	397 (293)	432 (319)	560 (413)	271 (200)	383 (282)	3/4	
7/8	193 (142)	248 (183)	495 (365)	641 (473)	698 (515)	904 (667)	437 (323)	617 (455)	7/8	
1	289 (213)	373 (275)	742 (547)	960 (708)	1048 (773)	1356 (1000)	654 (483)	924 (681)	1	

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION CAP SCREWS AND CARRIAGE BOLTS















SAE GRADE 5

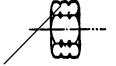
SAE GRADE 8

REGULAR NUTS

SAE GRADE 5 HEX NUTS

SAE GRADE 8 HEX NUTS

LOCKNUTS



GRADE IDENTIFICATION
GRADE A NO NOTCHES
GRADE B ONE CIRCUMFERENTIAL NOTCH
GRADE C TWO CIRCUMFERENTIAL NOTCHES



GRADE IDENTIFICATION GRADE A NO MARKS GRADE B THREE MARKS

GRADE C SIX MARKS

MARKS NEED NOT BE LOCATED AT CORNERS



GRADE A NO MARK GRADE B LETTER B GRADE C LETTER C

86529681 REV F 5.2

GRADE IDENTIFICATION

SECTION 5 TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTION
Depositing conditioned material in bunches or piles when swathing.	Improper swath gate adjustment.	Raise swath gate one latch hole.
bulleties of piles when swattling.	Improper ground speed to reel speed relationship.	Run reel 10% faster than ground speed. See Reel Speed Chart (Section 2).
	Improper crop flow, cutter bar to rolls.	Adjust reel position.
Leaves damaged or stripped off stems.	Too much pressure on the rolls.	Reduce pressure until leaves are not damaged.
	Reel speed too fast.	Decrease the reel speed. (Optional 16-tooth reel driver sprocket available.)
		See Reel Speed Chart (Section 2).
Leaving ragged or long stubble.	Ground speed too fast.	Match ground-to-reel speeds.
	Dull or worn out knife sections.	Sharpen or replace knife sections.
	Improper hold-down clip adjust- ment.	Adjust or replace hold-down clips.
	Worn out or broken guards.	Replace worn out or broken guards.
	PTO speed too slow.	Maintain RPM on the tractor PTO. Do not overspeed.
	Reel speed too slow for the ground speed.	Increase reel speed so it is about 10% faster than ground speed.
	Header flotation too light.	Increase header weight to 32 kg (70 lbs.) (smooth ground conditions).
	Sickle drive belts too loose.	Adjust belts.
	Reel belt slipping excessively.	Adjust belt as detailed in "Reel Drive Belt" (Section 4).

PROBLEM	POSSIBLE CAUSE	CORRECTION
Excessive breakage of guards and knives.	Cutting too low in stony conditions.	Raise cutting height with adjust- able skid shoes.*
	Guards, knives, and hold-down clips not properly aligned.	Align guards and knives and adjust hold-down clips so knife assembly runs freely.
	Header flotation too heavy for stony fields.	Adjust flotation springs to float header with 16 kg-23 kg force (35 lbs50 lbs.).
	Ground speed too high in stony conditions.	Reduce ground speed.
Not cutting short enough in down	Ground speed too fast.	Decrease ground speed.
material.	Reel speed too slow.	Increase reel speed.
	Cutting height too high.	Lower cutting height with the adjustable skid shoes.*
	Tractor PTO speed too slow.	Maintain tractor PTO RPM. Do not overspeed.
	Down crop not picked up by reel.	Move reel down and forward.
Small strip of run down, uncut	Ground speed too fast.	Decrease ground speed.
material.	Crowding of the uncut material.	Do not crowd the uncut material.
	Reel speed too slow.	Increase reel speed.
	Broken or bent knife section or guard.	Replace or straighten knife section or guard.
Forming poor or bunchy windrow.	Tractor PTO speed too slow.	Maintain standard RPM on the tractor PTO. Do not overspeed.
	Incorrect windrow baffle adjust- ment.	Raise baffle until no bunching occurs.

^{*}Adjust the flotation springs for proper flotation (32 kg) (70 lbs.) at push bar - 16 kg-23 kg (35 lbs.-50 lbs.) in stony conditions.

SECTION 5 - TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTION
Knocking in the sickle drive.	Rubber bushing has worn out in knife head.	Replace the rubber bushing.
	Loose connecting link bearings.	Adjust or replace bearings.
	Knife not adjusted properly.	Adjust ledger and back clearance at knife head end.
		Align knives at center overlap.
Breakage of the reel drive belt.	Belt too tight.	Adjust belt as detailed in "Reel Drive Belt" (Section 4).
	Paint or rust on the drive sheave.	Remove paint or rust.
Plugging on the guards.	Cutting crops with an extremely thick or wet undergrowth.	Cut when undergrowth is dry.
	thick of wet undergrowth.	Raise cutting height to get above dead or wet material.
		Use optional stub guards.
		Align knife sections, hold-down clips and guards.
Pulling material by the roots when cutting back swath or tall	Excessive roll pressure.	Reduce roll pressure.
material leaning into machine.	Ground speed too slow.	Increase ground speed.
	Reel speed too fast.	Reduce reel speed.
Short material being carried over reel.	Reel in wrong location.	Move reel rearward.
1001.	Reel speed too fast.	Reduce reel speed.
		Install optional 16-tooth reel speed reduction sprocket.

SECTION 6 OPTIONAL EQUIPMENT

CROP DIVIDERS

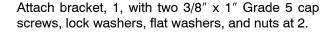
A crop divider bundle includes dividers for both ends of the header. The right crop divider is shown, the left crop divider is similar.



⚠ WARNING ⚠



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

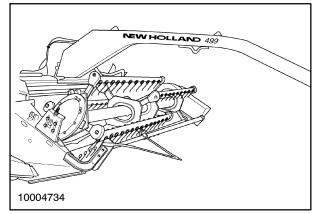


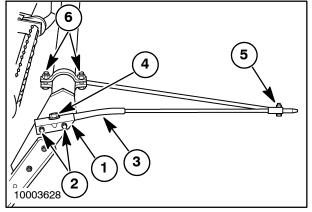
NOTE: The deflector must bend down in front of arrow, 3.

Attach deflector, 3, to the bracket with a 5/16" x 1-3/4" Grade 5 cap screw, lock washer, flat washer, and nut at 4.

Attach the brace to the deflector with a 5/16" x 1-1/4" cap screw, lock washer, and nut at 5. Remove paint from the deflector so the brace sleeve can be positioned at the rear hole in the deflector.

Install the clamps around the push bar as shown and secure with two 1/2" x 1-1/2" Grade 5 cap screws and lock nuts at 6. Position the brace between the clamps at the front of the push bar. Tighten this bolt securely. Tighten the rear bolt to securely clamp the divider to the push bar.





HYDRAULIC GUARD ANGLE ADJUSTMENT KIT

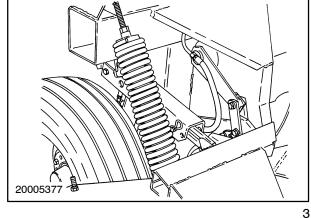
The hydraulic guard angle adjustment kit allows "on-the-go" guard angle selections between 4 degrees and 10 degrees below horizontal. Also, the angle adjustment range can be locked at 4 degrees or limited to 7 degrees. Adjustments are made from the tractor through the hydraulic lift control. Installation information is provided with the kit.



A WARNING A



Disengage the PTO, turn off the tractor engine and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean or unplug machine with the engine running. Failure to comply could result in death or serious injury.

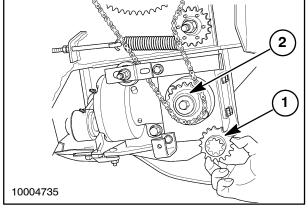


REEL SPEED REDUCTION SPROCKET

A sixteen-tooth sprocket, 1, is available for cane or stemmy crops between 457 mm and 610 mm (18" and 24") tall where a slower reel speed is necessary to deliver the material to the rolls. This sprocket reduces the reel speed by 16%.

Remove the reel drive chain and the center bolt in sprocket, 2. Remove the sprocket and install sprocket, 1.

Tighten the center bolt securely and install the chain. Tighten the reel drive chain spring as detailed in "Reel Drive Chain" (Section 4).



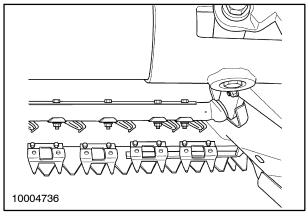
STUB GUARDS

Stub guards should be used for cutting heavy, thick or wet undergrowth where material hairpins over the points of standard guards. Stub guards require more maintenance than standard guards.

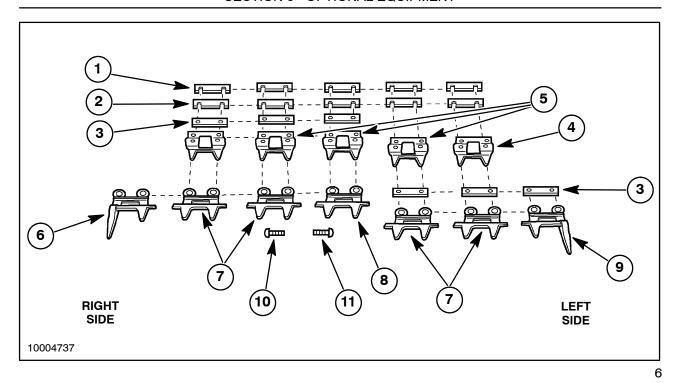
In extreme conditions, wet or dead undergrowth or fine, wet grass may plug the cutter bar or the material may build up on the points of the standard guards. In these conditions, stub guards may be used to reduce the plugging.

IMPORTANT: Stub guards do not have points to protect the front of the knife sections so the cutter bar will require more maintenance. Stub guards may leave longer or more uneven stubble and are not recommended for fields with rocks. Regular guards should be reinstalled when cutting conditions improve.

Parts required to install stub guards in place of regular guards can be purchased from your New Holland dealer.



5



DESCRIPTION		PART NUMBER	QUANTITY REQUIRED*
1	0.3 mm" (0.010) shim. Use as needed under all knife clips.	244500	23
2	1 mm ()0.036" shim. Use as needed under all knife clips.	199283	23
3	3 mm (0.120") shim. Use one between cutter bar and all guards		
	to left of special center guard. Use one between cutter bar and		
	knife clip at special center guards and guards on right half of cutter bar.	634780	5
4	Knife clip. Use at OUTER REGULAR stub guards.	767636	2
5	Knife clip. Use at all guards except two outer guards on each side.	767636	21
6	Right stub guard. No knife clip used.	858774	1
7	Regular stub guard	858764	22
8	Center stub guard	858765	1
9	Left stub guard. No knife clip used	858775	1
10	2" guard bolt	280804	4
11	1-3/4" guard bolt	88807	39

^{*}Quantity required is minimum number required if all the original shims, bolts, and nuts can be reused. Extra shims, 1 and 2, may be required to obtain 0.001" to 0.015" (0.03 mm to 0.38 mm) clearance between knife sections and knife clips.

SECTION 7 SPECIFICATIONS

Overall Width

Overall Length

Height

Hitch type Yoke hitch with tractor drawbar extension

Drive PTO driven hydrostatic system, 540 RPM or

1000 RPM PTO

Hydrostatic System

Pump (540 RPM PTO) 45.4 cc (2.77 cu. in.) with step-up

gearbox on tractor PTO

(1000 RPM PTO) 2.01 cu. in. w/step-up gearbox

on tractor PTO

Filter Full flow

and PTO locations. Two remote hydraulic systems required, capable of pumping fluid at 120.65 bar

(1750 PSI)

Material Discharge

Adjustment Adjustable swath gate controlled by 11-position handle

to give swath, windrow or intermediate widths.

Ground Clearance

Guard points—

Windrow shields---

 Reel

Type Rolareel™

(in direction of travel) 6.5 km/hr - 10.7 km/hr (4.0 MPH - 6.6 MPH) w/speed reduction kit

3804 mm (149-3/4") Length (at longest point in front of reel) Spider angle relative to tube axis 0.61 rad. (35 degrees)

Tine bar bearings Ball bearings

Reel cross bearings Sealed-for-life ball bearings (2) Sealed-for-life ball bearings

Cam follower bearings Sealed-for-life ball bearings

Drive reduction bearings Needle bearings

Cutter Bar

Width 3734 mm (12'3")

Guard angle Adjustable 4 degrees, 7 degrees, or 10 degrees

(4 degrees to 10 degrees optional hydraulic

guard angle adjustment kit)

Guards Twin forged steel, heat treated (PN 219191) Knives Two opposing knife assemblies with underserrated

sections 3 mm (0.120") thick

Sickle Drive

Type Bevel gearbox driven crankshaft drive rocker arm

through a connecting rod. Knife head pivots on rubber bushing. Gearboxes are driven by 3-HB

V-belt drive from conditioner

Stroke 76 mm (3")

Bearings

Gearbox Tapered roller Connecting rods Tapered roller

Carrier bearing

(connects left and right gearboxes) Needle bearings Rocker arm pivots Rubber bushing Belt drive Tapered roller

Push Bar Tubular steel, adjustable height

Conditioner

Roll type Molded rubber with intermeshing chevron design lugs

Bearings Sealed ball bearings

Drives Gear-driven, U-joint drive to upper roll,

straight shaft to lower roll

Roll Drive Gearbox

Gears Heat-treated 6-pitch spur gears

Bearings Tapered roller

SECTION 7 - SPECIFICATIONS

Capacity at 8 km/hr (5 MPH) 12' 2.83 ha/hr (7 ac/hr)

Wheels

Bearings Tapered roller

with heavy undertread

Hydraulic Cylinders

Lift cylinder Master-slave system

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OWNER COPY

DELIVERY REPORT

MODEL 499 HAYBINE® MOWER-CONDITIONER

Delivery Date	
Owner's Name	
Address	
Dealer's Name	
Address	
Model	
PIN	
Using the operator's manual as a guide, instruction was given as	s indicated by the check marks.
Proper use of the operator's manual	
Safety precautions and safety practices	
Attaching to the tractor	
Lubrication points and schedule	
Maintenance schedule	
Operation of control and instruments	
Field operation and adjustments for various crop conditions	
Troubleshooting	
Preseason service	
End of season service	
Dealer representative signature	Date
I have been instructed in the operation, maintenance and safet operator's manual.	ty features of this machine as detailed in the
Owner's signature	Date

DEALER COPY

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